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EHICLE DETECTION--PHASE III
ASSIVE BUS DETECTOR /
INTERSECTION PRIORITY SYSTEM DEVELOPMENT

Vol. II, Part II. Appendix D--Computer Program Listings

MAR 10 1977

December 1975
Final Report

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16. Abstract

This volume contains the description of the software developed for the Passive Bus Detector/Intersection Priority System. The program documentation is formatted according to the Program Documentation section of the FHWA Documentation Standards. The computer program documentation is referenced in other volumes of this report as the following appendices:

Appendix A. FORTRAN IV Version of the Vehicle Classification Algorithm
Appendix B. BPCU Program for Minneapolis Installation
Appendix C. BPCU Program for Washington Installation

Appendix C is to be treated as an addendum to Appendix B and contains documentation of only those modules which are different from the Minneapolis Installation program in Appendix B.

Appendix D, Software and Computer Printouts, is presented separately as Part II of this volume.

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APPENDIX D. PROGRAM LISTINGS

This appendix contains the program listings for three computer programs.

FORTRAN IV Version of the Vehicle Classification Algorithm

Compilation listing for program execution on the XDS Sigma 5.

PBD33J - BPCU Program for Minneapolis Installation

Assembly listing of the Passive Bus Detector Software in the microcomputer of the Bus Preempt Controller Unit (BPCU) as field tested at 33rd Avenue and Johnson Street Northeast in Minneapolis, Minnesota.

PBD14C - BPCU Program for Washington Installation

Assembly listing of the Passive Bus Detector Software in the microcomputer of the Bus Preempt Control Unit (BPCU) as field tested at 14th and C Streets in Washington, D. C.

PROGRAM LISTING OF THE FORTRAN IV VERSION
OF THE VEHICLE CLASSIFICATION ALGORITHM.

```
19147 NOV 23,'75 ID=000B-C00
JOB 4510, PROVC
ASSIGN M:SI,(DEVICE,CRA03),(FBCD)
ASSIGN F:5,(DEVICE,CRA03),(FBCD)
ASSIGN F:9,(DEVICE,LPA02)
ASSIGN M:89,(FILE,MAIN)
FORTRAN SI,89,LS
```

APPENDIX D. FIGURE A.8

PROGRAM LISTING OF THE FORTRAN IV VERSION OF THE VEHICLE CLASSIFICATION ALGORITHM

```
C*****************************************************************
C*********************  FORTRAN VEHICLE CLASSIFIER  ****************
C*****************************************************************
C*****************************  MAIN PROGRAM  ***********************
C*****************************************************************
C  THE PURPOSE OF THE MAIN PROGRAM IS TO READ A VEHICLE SIGNATURE AND
C CALL THE VEHICLE CLASSIFICATION ROUTINE TO EVALUATE IT. THE MAIN
C PROGRAM ALSO READS IN THE PRINTOUT CONTROL PARAMETER, CLEARS THE PERR
C AND VCLOG ARRAY, AND JUST PRIOR TO PROGRAM TERMINATION, PRINTS OUT THE
C PERR AND VCLOG ARRAYS.
C*****************************************************************
C******  SUBROUTINES CALLED BY THE MAIN PROGRAM  *********************
C  VCLAS-CLASSIFYS A VEHICLE  SIGNATURE AS BUS OR NON-BUS
C*****************************************************************
C*********************  VARIABLES  ***********************************
C PERR-PREEMPT ERROR BUFFER
C SDB-SIGNATURE DATA BASE
C VCDT-VEHICLE DETECTOR INDEX NUMBER
C VCLOG-VEHICLE CLASSIFIER LOG
C VCOUT-PRINTOUT CONTROL PARAMETER
C*****************************************************************
      COMMON VCOUT,PERR(17)
      COMMON VCDB(25),VCLOG(15),VCCO(10),SDB(32,8),VCDT
      INTEGER VCOUT,PERR
      INTEGER VCDB,VCLOG,VCCO,SDB,VCDT
C
C     VCOUT CONTROLS PRINTOUT IN THE VEHICLE CLASSIFICATION ROUTINE
C             0  =  PRINTOUT OF SUMMARY ONLY
C             1  =  LIMITED PRINTOUT
C             2  =  FULL PRINTOUT
      READ (5,98) VCOUT
      VCOUT = VCOUT - 1
C             CLEAR VCLOG ARRAY
              DO 4 I=1,15
              VCLOG(I) = 0
   04         CONTINUE
C             CLEAR PERR ARRAY
              DO 6 I = 1,17
              PERR(I) = 0
   06         CONTINUE
C     SPECIFY DETECTOR
C        ASSUME ALL SIGNATURES FROM DETECTOR ONE
      VCDT = 1
C
C     READ IN VEHICLE SIGNATURE DATA
   10 READ(5,99) (SDB(VCDT,I),I=1,7)
      IF (SDB(1,1).EQ.0) GO TO 20
C     ADD END OF SIGNATURE FLAG TO SIGNATURE DATA BLOCK
      SDB(VCDT,8) = 1
C
C     CALL VEHICLE CLASSIFIER
      CALL VCLAS
      GO TO 10
   20 WRITE(9,95)
      WRITE(9,94)(VCLOG(J),J=1,6)
      WRITE(9,96)(PERR(J),J=1,17)
   23 STOP
```

```
   94  FORMAT(10X,36HVEHICLE CLASSIFICATION - VEHICLE LOG/
     +15X,20HNOISE                  ,I10/
     +15X,20HGROSS TEST FAILURES    ,I10/
     +15X,20HSTOPPED VEHICLES       ,I10/
     +15X,20HMOVING VEHICLES        ,I10/
     +15X,20HNON-BUSES              ,I10/
     +15X,20HBUSES                  ,I10///)
   95  FORMAT(1H1,15HEND OF FILE READ)
   96  FORMAT(///10X,25HPREEMPT ERROR BUFFER DUMP/15X,10HERROR FLAG,I10/
     +45X,20H COUNTER    KEY WORD/
     +15X,30HOVERFLOW                          ,2I10/
     +15X,30HDETECTOR OUT OF RANGE             ,2I10/
     +15X,30HAMPLITUDE VALUE OUT OF RANGE      ,2I10/
     +15X,30HTIME VALUE OUT OF RANGE           ,2I10/
     +15X,30HTIME VALUE OUT OF ORDER           ,2I10/
     +15X,30HNOISE                             ,2I10/
     +15X,30HEOS STATUS CHANGE DURING COPY     ,2I10/
     +15X,30HSIGNATURE LOSS                    ,2I10)
   97  FORMAT(1H ///16HEND OF FILE READ)
   98  FORMAT (I2)
   99  FORMAT (71A)
       END
```

```
                          HEX     DEC                                HEX     DEC                                HEX     DEC
NAME   TYPE CLASS         LOC     WORDS      NAME   TYPE CLASS       LOC     WORDS      NAME   TYPE CLASS       LOC     WORDS
----   ---- -----       -------   -----      ----   ---- -----     -------   -----      ----   ---- -----     -------   -----
I         I SCALR       00000 V       1      J         I SCALR     00001 V       1      PERR      I ARRAY     00001 C      17
SDB       I ARRAY       00044 C     256      VCCO      I ARRAY     0003A C      10      VCDB      I ARRAY     00012 C      25
VCDT      I SCALR       00144 C       1      VCLAS       SPROG     EXTERN               VCLOG     I ARRAY     0002B C      15
VCOUT     I SCALR       00000 C       1

          HEX                HEX                HEX                HEX                HEX                HEX
LABEL     LOC      LABEL     LOC      LABEL     LOC      LABEL     LOC      LABEL     LOC      LABEL     LOC
-----   -----      -----   -----      -----   -----      -----   -----      -----   -----      -----   -----
    4   0000E          6   00018         10   0001D         20   00034         29   00052         94   00054
   95   00091         96   00099         97   00106         98   0010E         99   00110

LOCAL VARIABLES (2 WORDS):

   00000 I          00001 J

BLANK COMMON (325 WORDS):

   00000 VCOUT      00001 PERR       00012 VCDB       0002B VCLOG      0003A VCCO       00044 SDB
   00144 VCDT

EXTERNAL SUBPROGRAMS REQUIRED:

   VCLAS      9BCDREAD   9BCDWRIT   9ENDIOL    9INITIAL   9IODATA    9STOP

HIGHEST ERROR SEVERITY: 0 (NO ERRORS)

                    DEC       HEX
                   WORDS     WORDS
                   -----     -----
 GENERATED CODE:    277     00115
      CONSTANTS:      0     00000
LOCAL VARIABLES:      2     00002
          TEMPS:      2     00002
                   -----     -----
  TOTAL PROGRAM:    261     00119   (PLUS BLANK COMMON)
```

```
C
      SUBROUTINE ERE(I,J1,K)
C*************************************************************************
C  THIS PROGRAM RECORDS AND PRINTOUTS INFORMATION CONCERNING ERRORS
C DETECTED BY SUBROUTINE VCLAS.
C*************************************************************************
C***************  NO SUBROUTINES CALLED BY THIS ROUTINE  *****************
C*************************************************************************
      DIMENSION K(17)
      COMMON VCOUT,PERR(17)
      COMMON VCOB(25),VCLAG(15),VCCO(10),SDR(32,8),VCDT
      INTEGER VCOUT,PERR
      INTEGER VCOB,VCLAG,VCCO,SDR,VCDT
      DIMENSION CON(33)
      DATA (CON(J),J=1,33)/2.5,0.43,.7,0.0,0.0,0.0,0.0,2.73,0.876,2.52,0.139,
     +0.0,0.0,0.0,0.0,0.0,.277,0.0198,0.298,0.947,0.96,1.66,1.36,2.17,.4,1.
     +1.444,.93,6.47,3.0,5.0/
      IF (VCOUT) 30,25,20
   20 WRITE(9,99) I,J1
      IF(I.EQ.0) WRITE(9,900)
      IF(I.EQ.1) WRITE(9,901)
      IF(I.EQ.2) WRITE(9,902)
      IF(I.EQ.3) WRITE(9,903)
      IF(I.EQ.4) WRITE(9,904)
      IF(I.EQ.5) WRITE(9,905)
      IF(I.EQ.6) WRITE(9,906)
      IF(I.EQ.7) WRITE(9,907)
      WRITE(9,98)(VCOB(J),J=1,8),((CON(J),VCOB(J)),J=9,12),(VCOB(J),J=
     +13,14),((CON(J),VCOB(J)),J=15,16),VCOB(17),((CON(J),VCOB(J)),J=
     +18,19),(VCOB(J),J=20,22)
      GO TO 30
   25 WRITE(9,97) I,J1
   30 I1 = (I*2) + 2
      I2 = I1 + 1
      K(I1) = K(I1) + 1
      K(I2) = J1
      RETURN
  900 FORMAT(15X,8H0VERFLOW/)
  901 FORMAT(15X,21HDETECTOR OUT OF RANGE/)
  902 FORMAT(15X,28HAMPLITUDE VALUE OUT OF RANGE/)
  903 FORMAT(15X,23HTIME VALUE OUT OF RANGE/)
  904 FORMAT(15X,23HTIME VALUE OUT OF ORDER/)
  905 FORMAT(15X,5HNOISE/)
  906 FORMAT(15X,53HEOS STATUS REGISTER HAS CHANGED DURING COPY OPERATIO
     +N/)
  907 FORMAT(15X,14HSIGNATURE LOSS/)
   97 FORMAT(10X,14HERROR DETECTED,2I10)
   98 FORMAT(10X,10HVCOB ARRAY/15X,17HVEHICLE SIGNATURE/
     +15X,30HTOTAL SIGNATURE TIME          ,I10,16H ( * 4 MILLISEC)/
     +15X,30HFIRST PEAK AMPLITUDE          ,I10/
     +15X,30HTIME FROM TURN ON TO 1ST PEAK ,I10,16H ( * 4 MILLISEC)/
     +15X,30HSECOND PEAK AMPLITUDE         ,I10/
     +15X,30HTIME FROM TURN ON TO 2ND PEAK ,I10,16H ( * 4 MILLISEC)/
     +15X,30HLAST PEAK AMPLITUDE           ,I10/
     +15X,30HTIME FROM TURN ON TO LAST PEAK,I10,16H ( * 4 MILLISEC)/15X,
     +19HT(C1)+T(C4)-T(C3) =,I10,3X,2HB0//12X,62HTHE FOLLOWING ARE DETER
     +MINED IN THE STOPPED VEHICLE CLASSIFIER/15X,F8.5,5H*A1 =,I10,3X,
```

```
     +3HB13/15X,F8.5,5H*A2 =,I10,3X,3HB13/15X,F8.5,5H*A1 =,I10,3X,3HB13/
     +15X,F8.5,5H*A2 =,I10,3X,3HB13/
     +24X,4HH1 =,I10,3X,3HB13/24X,4HH2 =,I10,3X,3HB13//12X,
     +61HTHE FOLLOWING ARE DETERMINED IN THE MOVING VEHICLE CLASSIFIER/
     +15X,F8.5,5H*A2 =,I21,3X,3HB13/15X,F8.5,5H*A1 =,I21,3X,3HB13/
     +25X,3HD =,I21,3X,3HB13/15X,F8.5,16H*(T(C2)-T(C1)) =,I10,3X,3HB13/
     +16X,F8.5,1H*(T(C3)-T(C2)) =,I10,3X,3HB13/25X,3HF =,I21,3X,3HB13/
     +24X,4H=4 =,I21,3X,3HB13/24X,4H=5 =,I21,3X,3HB13///)
99   FORMAT(1H0,10X,14HERROR DETECTED,2I10)
     END
```

```
                          HEX     DEC                                  HEX     DEC                                  HEX     DEC
NAME  TYPE CLASS          LOC     WORDS      NAME  TYPE CLASS          LOC     WORDS      NAME  TYPE CLASS          LOC     WORDS
----  ---- -----          -------  -----      ----  ---- -----          -------  -----      ----  ---- -----          -------  -----
CON      R ARRAY          00001 V     33      ERE      R SCALR          00000 V      1      ERE        SPROG          00000 P
I        I SCALR         *00025 V  DUMMY      I1       I SCALR          00023 V      1      I2       I SCALR          00024 V      1
J        I SCALR          00022 V      1      J1       I SCALR         *00026 V  DUMMY      K        I ARRAY         *00027 V  DUMMY
PERR     I ARRAY          00001 C     17      SDB      I ARRAY          00044 C    256      VCCO     I ARRAY          0003A C     10
VCDB     I ARRAY          00012 C     25      VCDT     I SCALR          00144 C      1      VCLOG    I ARRAY          0002B C     15
VCOUT    I SCALR          00000 C      1

        HEX                 HEX                 HEX                 HEX                 HEX                 HEX
LABEL   LOC      LABEL   LOC      LABEL   LOC      LABEL   LOC      LABEL   LOC      LABEL   LOC
-----  -----     -----  -----     -----  -----     -----  -----     -----  -----     -----  -----
   20  0000A        25  0008D        30  00093        97  000FB        98  000F3        99  001F0
  900  000A0       901  000A6       902  000AF       903  000BA       904  000C4       905  000CE
  906  000D3       907  000E4

LOCAL VARIABLES (37 WORDS):

   00000 ERE        00001 CON        00022 J          00023 I1         00024 I2

BLANK COMMON (325 WORDS):

   00000 VCOUT      00001 PERR       00012 VCDB       0002B VCLOG      0003A VCCO       00044 SDB
   00144 VCDT

ENTRY POINTS:

   00000 ERE

EXTERNAL SUBPROGRAMS REQUIRED:

   9BCDWRIT   9ENDIO    9IODATA    9SETUPN

HIGHEST ERROR SEVERITY: 0 (NO ERRORS)

                    DEC      HEX
                   WORDS    WORDS
                   -----    -----
 GENERATED CODE:    506     001FA
      CONSTANTS:      0     00000
LOCAL VARIABLES:     37     00025
          TEMPS:      4     00004
                   -----    -----
  TOTAL PROGRAM:    547     00223   (PLUS BLANK COMMON)
```

```
C
      SUBROUTINE VCLAS
C*****************************************************************
C  THIS PROGRAM CLASSIFYS VEHICLE SIGNATURES AS BUS OR NON-BUS. KEY
C DATUM ITEMS USED IN THIS EVALUATION MAY BE OUTPUTTED DEPENDING ON THE
C PRINTOUT CONTROL PARAMETER.
C*****************************************************************
C******  SUBROUTINES CALLED BY ROUTINE VCLAS
C FREE-RECORDS ERRORS DETECTED IN VEHICLE CLASSIFICATION ROUTINE
C*****************************************************************
C**********************  VARIABLES  ******************************
C CON-FLOATING POINT CONSTANTS
C FO= T(C1)*S/T(C1)+T(C4)-T(C3) WHERE S IS THE SCALE FACTOR
C F1F2-F1 + F2
C H1T1-EVALUATION TERM OF H1 FUNCTION
C H1T2-EVALUATION TERM OF H1 FUNCTION
C H2T1-EVALUATION TERM OF H2 FUNCTION
C H2T2-EVALUATION TERM OF H2 FUNCTION
C SDB-SIGNATURE DATA BASE
C VC31-G1 COEFFICIENT FOR H1 FUNCTION
C VC32-G2 COEFFICIENT FOR H1 FUNCTION
C VC41-G1 COEFFICIENT FOR H2 FUNCTION
C VC42-G2 COEFFICIENT FOR H2 FUNCTION
C VCCO-HOLDS COEFFICIENTS FOR THE EVALUATION OF THE K4 AND K5 FUNCTIONS
C VCST1-EVALUATION TERM FOR F1F2
C VCST2-EVALUATION TERM FOR FO
C VCST3-EVALUATION TERM FOR FO
C VCDB-VEHICLE SIGNATURE DATA BASE
C VCDT-VEHICLE DETECTOR INDEX NUMBER
C VCHD-HIGHEST DETECTOR INDEX NUMBER EXPECTED
C VCLD-LOWEST DETECTOR INDEX NUMBER EXPECTED = 1
C VCLOG-VEHICLE CLASSIFIER LOG
C VCVC-VEHICLE COUNTER
C VEH-VEHICLE STATUS   VEH=1 VEHICLE SIGNATURE BELONGS TO NON-BUS
C                      VEH=0 VEHICLE SIGNATURE BELONGS TO BUS
C*****************************************************************
      COMMON VCOUT,PERR(17)
      COMMON VCDB(25),VCLOG(15),VCCO(10),SDB(32,8),VCDT
      INTEGER VCOUT,PERR
      INTEGER VCDB,VCDT,VCHD,VCLD,VCLOG,VCCO,VCVC,SDB,VCST1,VCST2,VCST3,
     +VC31,VC32,VC41,VC42,H1T1,H1T2,H2T2,H2T1
      INTEGER VCC1,VCC2,VCC3,VCC4,VCC5,VEH,FO,F1F2
      DATA VCHD,VCLD/4,0/
      DIMENSION VCVC(32),CON(33)
      DATA (CON(J),J=1,33)/2.5,0.43,.7,0,0,0,0,0,2.73,0.874,2.52,0.139,
     +0,0,0,0,0,0,0,0,.277,0.0198,0.228,0.947,0.96,1.66,1.34,2.17,4.1,
     +1.444,3.93,6.47,3.0,5.0/
C
      IF(VCOUT) 3,2,1
   01 WRITE(9,904)
      GO TO 3
   02 WRITE(9,93)
C             CLEAR VCDB ARRAY
   03         DO 5 I = 1,25
              VCDB(I) = 0
   05         CONTINUE
C
```

```
C       INITIAL VARIABLES
        VCST1 = C0N(1)*16. + 0.5
        VCST2 = C0N(2)*16. + 0.5
        VCST3 = C0N(3)*16. + 0.5
        VC31 = C0N(9) * 4096
        VC32 = C0N(10) * 4096
        VC41 = C0N(11) * 4096
        VC42 = C0N(12) * 4096
        DO 7 L = 1,10
        VCCC(L) = C0N(L+19) * 4096
 07     CONTINUE
        HIT1 = C0N(30) * 4096
        HIT2 = C0N(31) * 4096
        HPT1 = C0N(32) * 4096
        HPT2 = C0N(33) * 4096
        F1 = 0
        F1F2 = 0
        C0N(15) = C0N(23)
        C0N(16) = C0N(22)
        C0N(18) = C0N(20)
        C0N(19) = C0N(21)
C
C
C
C       IS THE SPECIFIED DETECTOR IN RANGE
        IF(VCDT.GT.VCHD) GO TO 10
        IF(VCDT.GT.VCLD) GO TO 20
C               VEHICLE CLASSIFIER ERROR MODE 1
C               DETECTOR SPECIFIED DOES NOT EXIST
 10             CALL ERR(1,VCDT,PERR)
                GO TO 90
C
C       CHECK FBS STATUS REGISTER
 20     IF (SDB(VCDT,8).NE.0) GO TO 28
        WRITE(9,91)
        GO TO 90
C
C       COPY VEHICLE SIGNATURE DATA BASE
 28             DO 30 I = 1,8,1
                VCDB(I) = SDB(VCDT,I)
 30             CONTINUE
C
C       OPTIONAL PRINTOUT
        IF (VCAUT) 32,32,31
 31     WRITE(9,92)(VCDB(J),J=1,7)
 32     CONTINUE
C
C       RECHECK FBS STATUS REGISTER
        IF(SDB(VCDT,8).NE.0) GO TO 40
                CALL ERR(6,VCDT,PERR)
C               CHECK THIRD PEAK AMPLITUDE
                IF (SDB(VCDT,6).NE.0) GO TO 40
                CALL ERR(7,VCDT,PERR)
                GO TO 90
C
C       RESET FBS STATUS REGISTER
 40     SDB(VCDT,8) = 0
C
```

```
      C     TEST FOR NOISE
            IF (VCDB(1).GT.32) GO TO 50
      C
      C           TOTAL TIME OF SIGNATURE TOO SHORT FOR VEHICLE
                  CALL ERR(5,VCDT,PERR)
                  VCLOG(1) = VCLOG(1) + 1
      C           NOTE VCLOG IS A DOUBLE PRECISION ARRAY ON THE IMP
                  GO TO 90
      C
      C     INCREMENT VEHICLE COUNTER
   50 VCVC(VCDT) = VCVC(VCDT) + 1
      C
      C     GROSS FEATURES TEST
            IF (VCDB(6).NE.0) GO TO 60
      C           SIGNATURE FAILS GROSS FEATURES TEST
            IF (VCOUT) 53,52,52
   52 WRITE(9,900)
   53 VCLOG(2) = VCLOG(2) + 1
      C           VCLOG IS A DOUBLE PRECISION ARRAY ON THE IMP
                  GO TO 90
      C
      C     CHECK MAGNITUDE OF SIGNATURE DATA
      C           CHECK MAGNITUDE OF AMPLITUDE DATA
   60             DO 61 I = 2,6,2
                  IF (VCDB(I).LT.256) GO TO 61
                  CALL ERR(2,VCDT,PERR)
                  GO TO 90
   61             CONTINUE
      C           CHECK MAGNITUDE OF TIME DATA
                  DO 62 I = 1,7,2
                  IF (VCDB(I).LT.4096)  GO TO 62
                  CALL ERR(3,VCDT,PERR)
                  GO TO 90
   62             CONTINUE
      C
      C     CHECK FOR TIME OVERFLOW
   70 IF (VCDB(1).EQ.4096) GO TO 200
                  GO TO 100
      C
      C
      C     RETURN TO MAIN   VEHICLE CLASSIFIED AS NON-BUS
   90 VEH = 1
      RETURN
      C
      C
      C
      C     MOVING/STOPPED TEST
      C
      C
      C
      C     INSURE TIME DATA WORDS IN PROPER ORDER
  100 IF(VCOUT) 104,103,103
  103 WRITE(9,94)
  104 IF (VCDB(5).LT.VCDB(3)) GO TO 105
      IF (VCDB(7).LT.VCDB(5)) GO TO 105
      IF (VCDB(1).LT.VCDB(7)) GO TO 105
      GO TO 110
  105             CALL ERR(4,VCDT,PERR)
```

```
                VEW = 1
                RETURN
C       FORM T(C1) + T(C4) - T(C3)
 110    VCDB(8) = VCDB(3) + VCDB(1) - VCDB(7)
C       FORM FO
        FO = (VCDB(3)*16) / VCDB(8)
C       CHECK FOR OVERFLOW
        IF (FO.LE.32767) GO TO 120
C               OVERFLOW DETECTED
C               USE STOPPED VEHICLE CLASSIFIER
                CALL ERE(0,VCDT,PERR)
                GO TO 200
C       VEHICLE MAY BE MOVING IF 0.43 IS LESS THAN FO IS LESS THAN 0.7
 120    IF(FO.GE.VCST3) GO TO 200
        IF (FO.LT.VCST2) GO TO 200
C       FORM F1 + F2
        F1F2 = ((VCDB(7)-VCDB(3))*16) / VCDB(8)
C       CHECK FOR OVERFLOW
        IF (F1F2.LE.32767) GO TO 130
C               OVERFLOW DETECTED
C               USE STOPPED VEHICLE DETECTOR
                CALL ERE(0,VCDT,PERR)
                GO TO 200
C       VEHICLE IS CONSIDERED MOVING IF F1F2 IS LESS THAN OR EQUAL TO 2.5
 130    IF (F1F2.GT.VCST1) GO TO 200
        GO TO 300
C
C
C
C       STOPPED VEHICLE CLASSIFIER
C
C
C       INCREMENT STOPPED VEHICLE COUNTER
 200    IF(VCOUT) 202,201,201
 201    WRITE(9,95) FO,F1F2
 202    VCLOG(3) = VCLOG(3) + 1
C       NOTE VCLOG IS A DOUBLE PRECISION ARRAY ON THE IMP
C
C       FORM VC31 = A1
        VCDB(9) = VC31 * VCDB(4)
C       FORM VC32 = A2
        VCDB(10) = VC32 * VCDB(6)
C       FORM ((VC31*A1)+(VC32*A2)) / A0
        VCDB(13) = (VCDB(9)+VCDB(10)) / VCDB(2)
C       CHECK FOR OVERFLOW
        IF (VCDB(13).LE.32767) GO TO 210
C               OVERFLOW DETECTED
C               VEHICLE MAY=BUS
                CALL ERE(1,VCDT,PERR)
                GO TO 410
C
C       VEHICLE MAY BE A BUS IF VCDB(13) LIES BETWEEN H1T1 AND H1T2
 210    IF (VCDB(13).LT.H1T1) GO TO 410
        IF (VCDB(13).GE.H1T2) GO TO 410
C       FORM VC41 = A1
        VCDB(11) = VC41*VCDB(4)
C       FORM VC42 = A2
        VCDB(12) = VC42*VCDB(6)
C       FORM ((VC41*A1) + (VC42*A2))/A0
        VCDB(14) = (VCDB(11) + VCDB(12))/VCDB(2)
C       CHECK FOR OVERFLOW
```

```
      IF (VCDB(14).LE.32767) GO TO 220
C             OVERFLOW DETECTED
C             VEHICLE NON-BUS
              CALL ERE(0,VCDT,PERR)
              GO TO 410
C
C     VEHICLE IS BUS IF VCDB(14) LIES BETWEEN H2T1 AND H2T2
  220 IF (VCDB(14).LE.H2T1) GOTO 410
      IF (VCDB(14).GT.H2T2) GO TO 410
      GO TO 501
C
C
C
C     MOVING VEHICLE CLASSIFIER
C
C
  300 IF(VCOUT) 302,301,301
  301 WRITE(9,96) F0,F1F2
  302 VCC1 = 1
      VCC2 = 2
      VCC3 = 3
      VCC4 = 4
      VCDB(22) = 0
      VCLOG(4) = VCLOG(4) + 1
C     VCLOG IS A DOUBLE PRECISION ARRAY ON THE IMP
C     VCK
C             FORM C4 * A2
  310 VCDB(15) = VCCO(VCC4)*VCDB(6)
C             FORM C3 * A1
      VCDB(16) = VCCO(VCC3)*VCDB(4)
      VCDB(17) = (VCDB(16)-VCDB(15))/VCDB(2)
C     CHECK FOR OVERFLOW
      IF (VCDB(17).GT.32767) GO TO 600
C             FORM C1*(T(C2) - T(C1))
      VCDB(18) = VCCO(VCC1)*(VCDB(5)-VCDB(3))
C             FORM C2 * (T(C3) - T(C2))
      VCDB(19) = VCCO(VCC2)*(VCDB(7)-VCDB(5))
      VCDB(20) = (VCDB(19) - VCDB(18))/VCDB(8)
C     CHECK FOR OVERFLOW
      IF (VCDB(20).GT.32767) GO TO 600
C
C             FORM SUM
C     VEHICLE IS NON-BUS IF RESULTING SUM IS GREATER OR EQUAL TO ZERO
C
      IF(VCC1.EQ.6) GO TO 320
      VCDB(21) = VCDB(20) + VCDB(17) + VCCO(5)
      IF(VCDB(21).GE.0) GO TO 400
      GO TO 349
  320 VCDB(22) = VCDB(20) + VCDB(17) + VCCO(10)
      IF(VCDB(22).GE.0) GO TO 400
  349 IF(VCOUT) 351,351,350
  350 WRITE(9,902) VCDB(8),((CON(J),VCDB(J)),J=15,16),VCDB(17),((CON(J),
     +VCDB(J)),J=18,19),(VCDB(J),J=20,22)
  351 IF(VCC1.EQ.6) GO TO 500
      CON(15) = CON(28)
      CON(16) = CON(27)
      CON(18) = CON(25)
      CON(19) = CON(26)
      VCC1 = 6
      VCC2 = 7
      VCC3 = 8
      VCC4 = 9
      VCDB(21) = 0
```

```
      GO TO 410
C
C
 500  IF(VCBUT) 510,505,505
C     VEHICLE IS NON-BUS
 400  IF(VCBUT) 420,402,401
 401  WRITE(9,902) VCDB(8),((CON(J),VCDB(J)),J=15,16),VCDB(17),((CON(J),
     +VCDB(J)),J=18,19),(VCDB(J),J=20,22)
 402  WRITE(9,97)
      GO TO 420
 410  IF(VCBUT) 420,412,411
 411  WRITE(9,98) VCDB(8),((CON(J),VCDB(J)),J=9,12),(VCDB(J),J=13,14)
 412  WRITE(9,97)
 420  VCLOG(5) = VCLOG(5) + 1
C     NOTE VCLOG IS A DOUBLE PRECISION ARRAY ON THE IMP
      VEH = 1
      RETURN
C
C     VEHICLE IS A BUS
 501  IF(VCBUT) 510,505,504
 504  WRITE(9,98) VCDB(8),((CON(J),VCDB(J)),J=9,12),(VCDB(J),J=13,14)
 505  WRITE(9,99)
 510  VEH = 0
      VCLOG(6) = VCLOG(6) + 1
      RETURN
C
C     OVERFLOW ERROR
 600  VEH = 1
      CALL ERR(0,VCDT,PERR)
      RETURN
C
C
 904  FORMAT(1H1)
 900  FORMAT(10X,18HGRASS TEST FAILURE///)
  91  FORMAT(1HO,24HBOS STATUS REGISTER ZERO//33HVEHICLE CLASSIFICATION
     +TERMINATED)
  92  FORMAT(1HO,5X,18HVEHICLE-CLASSIFIER//15X,17HVEHICLE SIGNATURE/
     +15X,30HTOTAL SIGNATURE TIME           ,I10,16H ( * 4 MILLISEC)/
     +15X,30HFIRST PEAK AMPLITUDE           ,I10/
     +15X,30HTIME FROM TURN ON TO 1ST PEAK ,I10,16H ( * 4 MILLISEC)/
     +15X,30HSECOND PEAK AMPLITUDE          ,I10/
     +15X,30HTIME FROM TURN ON TO 2ND PEAK ,I10,16H ( * 4 MILLISEC)/
     +15X,30HLAST PEAK AMPLITUDE            ,I10/
     +15X,30HTIME FROM TURN ON TO LAST PEAK,I10,16H ( * 4 MILLISEC)/)
  93  FORMAT(1HO,5X,18HVEHICLE-CLASSIFIER)
  94  FORMAT(10X,19HBOBVING/STOPPED TEST)
  95  FORMAT(10X,15HSTOPPED VEHICLE,10X,3HF0=,I10,4H  B0,6X,6HF1*F2=,
     +I10,4H  B0//)
  96  FORMAT(10X,14HMOVING VEHICLE,10X,3HF0=,I10,4H  B0,6X,6HF1*F2=,I10,
     +4H  B0//)
  97  FORMAT(1H ,5X,7HNON-BUS//)
  98  FORMAT(15X,
     +19HT(C1)+T(C4)-T(C3) =,I10,3X,2HB0//15X,62HTHE FOLLOWING ARE DETER
     +MINED IN THE STOPPED VEHICLE CLASSIFIER/15X,FR*5,5H*A1 =,I10,3X,
     +3HB13/15X,F8*5,5H*A2 =,I10,3X,3HB13/15X,FR*5,5H*A1 =,I10,3X,3HB13/
     +15X,F8*5,5H*A2 =,I10,3X,3HB13/24X,4HH1 =,I10,3X,3HB13/24X,4HH2 =,I10,3X,3HB13)
 902  FORMAT(15X,19HT(C1)+T(C4)-T(C3) =,I10,3X,2HB0//15X,
```

```
      +61HTHE FOLLOWING ARE DETERMINED IN THE MOVING VEHICLE CLASSIFIER/
      +15X,F8.5,5H=A2 =,I21,3X,3HB13/15X,F8.5,5H=A1 =,I21,3X,3HB13/
      +25X,3HG =,I21,3X,3HB13/15X,F8.5,16H=(T(C2)-T(C1)) =,I10,3X,3HB13/
      +15X,F8.5,16H=(T(C3)-T(C2)) =,I10,3X,3HB13/25X,3HF =,I21,3X,3HB13/
      +24X,4HK4 =,I21,3X,3HB13/24X,4HK5 =,I21,3X,3HB13///)
   99 FORMAT(1H ,5X,3HBUS//)
      END
```

NAME	TYPE	CLASS	HEX LOC		DEC WORDS
COM	R	ARRAY	00035	V	33
F1F2	I	SCALR	00034	V	1
H2T1	I	SCALR	0002D	V	1
J	I	SCALR	00056	V	1
SDB	I	ARRAY	00044	C	256
VCC2	I	SCALR	0002F	V	1
VCC5	I	UNUSED			
VCHD	I	SCALR	00001	V	1
VCLD	I	SCALR	00002	V	1
VCST1	I	SCALR	00023	V	1
VCVC	I	ARRAY	00003	V	32
VC41	I	SCALR	00028	V	1

NAME	TYPE	CLASS	HEX LOC		DEC WORDS
ERR		SPRAG	EXTERN		
H1T1	I	SCALR	0002A	V	1
H2T2	I	SCALR	0002C	V	1
L	I	SCALR	00058	V	1
VCC0	I	ARRAY	0003A	C	10
VCC3	I	SCALR	00030	V	1
VCDB	I	ARRAY	00012	C	25
VCLAS		SPRAG	00000	P	
VCLBG	I	ARRAY	0002B	C	15
VCST2	I	SCALR	00024	V	1
VC31	I	SCALR	00026	V	1
VC42	I	SCALR	00029	V	1

NAME	TYPE	CLASS	HEX LOC		DEC WORDS
F0	I	SCALR	00033	V	1
H1T2	I	SCALR	0002B	V	1
I	I	SCALR	00057	V	1
PERR	I	ARRAY	00001	C	17
VCC1	I	SCALR	0002E	V	1
VCC4	I	SCALR	00031	V	1
VCDT	I	SCALR	00144	C	1
VCLAS	R	SCALR	00000	V	1
VCBUT	I	SCALR	00000	C	1
VCST3	I	SCALR	00025	V	1
VC32	I	SCALR	00027	V	1
VEH	I	SCALR	00032	V	1

LABEL	HEX LOC	LABEL	HEX LOC	LABEL	HEX LOC	LABEL	HEX LOC	LABEL	HEX LOC	LABEL	HEX LOC
1	00005	2	0000A	3	0000E	5	00015	7	00040	10	00065
20	0006B	28	00073	30	00070	31	000R2	32	000BF	40	000A0
50	000A0	52	000B3	53	000R7	60	00089	61	000C7	62	000D8
70	000DB	80	000DF	91	00227	92	002RA	93	002F7	94	00300
95	01308	96	00318	97	0032E	98	00334	99	003D4	100	000E2
103	000E4	104	000E8	105	000F2	110	000FA	120	00108	130	0011F
200	00123	201	00125	202	0012B	210	0013F	220	00158	300	0015F
301	00161	302	00167	310	00172	320	0019C	340	001A2	350	001A4
351	001CD	400	001E6	401	001F9	402	00212	410	00217	411	0021A
412	00235	420	00239	500	00153	501	0023D	504	00240	505	00258
510	0025F	600	00263	900	0024E	902	00378	904	00268		

LOCAL VARIABLES (89 WORDS):

00000	VCLAS	00001	VCHD	00002	VCLD	00003	VCVC	00023	VCST1
00024	VCST2	00025	VCST3	00028	VC41	00029	VC42	0002A	H1T1
0002B	H1T2	0002C	H2T2	0002D	H2T1	0002E	VCC1	0002F	VCC2
00030	VCC3	00031	VCC4	00032	VEH	00033	F0	00034	F1F2
00035	COM	00056	J	00057	I	00058	L		

BLANK COMMON (325 WORDS):

00000	VCBUT	00001	PERR	00012	VCDB	0002B	VCLBG	0003A	VCC0
00044	SDB	00144	VCDT						

ENTRY POINTS:

00000 VCLAS

EXTERNAL SUBPROGRAMS REQUIRED:

ERR $BCDARIT $ENDIAL $IBDATA $RTBI $SETUPO

HIGHEST ERROR SEVERITY: 0 (NO ERRORS)

	DEC WORDS	HEX WORDS	
GENERATED CODE:	906	0030A	
CONSTANTS:	11	0000B	
LOCAL VARIABLES:	89	00059	
TEMPS:	6	00006	
TOTAL PROGRAM:	1092	00444	(PLUS BLANK COMMON)

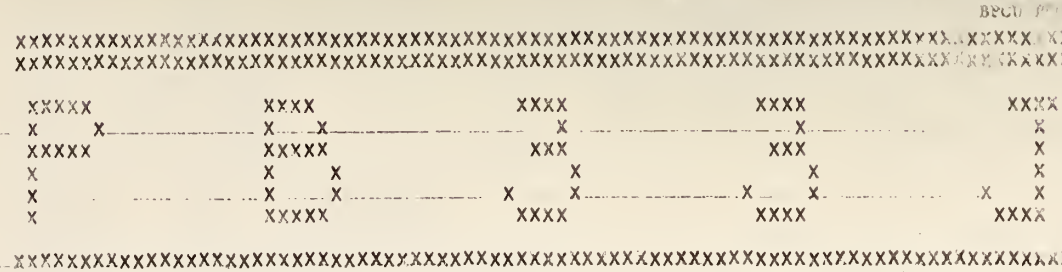
```
LOAD (EF,(MAIN),(SERR,F4IIB)),(MAP)
, (UNSAT,(F4LIB1),(LMN,PADVC),(PERM)
```

PBOVC

```
CSEC    32AE 0
CSEC    20AA 0
DSEC    2C00 0    F4:COM
UDEF    32AE 0    4MAIN
CSEC    33C4 0
CSEC    20AE 0
DSEC    2C00 0    F4:COM
 DEF    33C4 0    ERF
CSEC    35BE 0
CSEC    20D8 0
DSEC    2C00 0    F4:COM
 DEF    35BE 0    VCLAS
UDEF    2E38 0    9ERROR
CSEC    2F35 0
LDEF    39E4 0    9INITIAL
LDEF    3A15 0    9BCDREAD
LDEF    406D 0    9IODATA
LDEF    4099 0    9ENDIOI
LDEF    3A4F 0    9BCDWRIT
LDEF    412E 0    9STOP
LDEF    39D6 0    9SETUPN
LDEF    39BE 0    9SETUPC
LDEF    39B6 0    9RTOI
LDEF    416A 0    7ERRHEAD
LDEF    4194 0    7ERRTEXT
LDEF    41C4 0    7PAC
LDEF    41BE 0    7PRC
LDEF    41C2 0    7PRQ
LDEF    4134 0    7STOP
LDEF    39A4 0    EXIT
LDEF    39AE 0    9ITOD
LDEF    39AE 0    9ITOR
LDEF    39B7 0    9DTOI
LDEF    39C0 0    9SETUP1
LDEF    39C8 0    9SETUP2
LDEF    39D7 0    7SET
LDEF    39D6 0    9SETUP4
LDEF    2F03 0    8ABORTEX
LDEF    2F04 0    8ABRTSEV
LDEF    2F05 0    8EOFEXIT
LDEF    2F06 0    8ERREXIT
LDEF    2F07 0    8FLOVTRG
LDEF    2F08 0    8IOTRIG
LDEF    2F09 0    8SENLITE
LDEF    2FFC 0    8TINIT
LDEF    2FCE 0    6ENDEQ
LDEF    2FCF 0    6ERREQ
LDEF    40DC 0    7EOFABRT
LDEF    40EE 0    7UNITADR
LDEF    2F90 0    8BCDBUF
LDEF    2FC5 0    8DCBADR
LDEF    2F1A 0    8IODLINK
LDEF    2F17 0    8TALPHA
LDEF    3A90 0    9IEDIT
LDEF    3A2A 0    7READ
LDEF    3A18 0    9BCDRDFE
LDEF    3A14 0    9READ
LDEF    3A92 0    9BEDIT
LDEF    3A4E 0    9PRINT
```

```
LDEF    DATE  0   9PRINT
LDEF    1A2       7FREMARK
LDEF    2FC4  0   8K     3
LDEF    2FC0  0   6ERROR
LDEF    2FC9  0   8INPTERM
LDEF    2FC1  0   8IBDADDR
LDEF    2FC2  0   8IBDTYPE
LDEF    2FC3  0   8IBENLBC
LDEF    2F3E  0   8TEDIT
LDEF    403C  0   9DATA
LDEF    2FC8  0   6NRELMTS
LDEF    406E  0   7IBDATUM
LDEF    2F1C  0   8TBETA
LDEF    4018  0   9I9LUSA
LDEF    418F  0   7ERROR
LDEF    415C  0   7GETMODE
LDEF    2FCA  0   6DATLINK
LDEF    40C0  0   9REWIND
LDEF    40CE  0   9ENDFILE
LDEF    2F22  0   8MSGBUF
LDEF    2FC6  0   6UNITNAM
LDEF    2FCC  0   6DCBNAME
LDEF    414E  0   7BINDEC
LDEF    2FC8  0   6UNITVAL
LDEF    2FE6  0   8T0
LDEF    2FEA  0   8TERROR
LDEF    41E6  0   7BUFOUT
LDEF    41E4  0   7BUFOUTC
LDEF    41E1  0   7ERRINIT
LDEF    41CC  0   7PHC
LDEF    41DD  0   7PHL
LDEF    2FE9  0   8T1
LDEF    2FEA  0   8T2
LDEF    2FEB  0   8T3
LDEF    2FEC  0   8T4
LDEF    2FED  0   8T5
LDEF    2FEE  0   8T6
LDEF    2FEF  0   8T7
LDEF    2FF0  0   8T8
LDEF    2FF1  0   8T9
LDEF    2FF2  0   8T10
LDEF    2FF3  0   8T11
LDEF    2FF4  0   8T12
LDEF    2FF5  0   8T13
LDEF    2FF6  0   8T14
LDEF    2FF7  0   8T15
LDEF    2FF8  0   8T16
LDEF    2FF9  0   8T17
LDEF    2F3E  0   6BINBUF
LDEF    2FD1  0   6EGFCALL
LDEF    2FD2  0   6EGFJADR
LDEF    2FD3  0   6EGFUADR
LDEF    2FD4  0   6EGFUTRG
LDEF    2FDC  0   6RECSIZE
LDEF    2FD5  0   8TDUMP
LDEF    2FDA  0   8TINPUT
LDEF    2FEE  0   6DISCBUF
        2046      SEGLO0
        3047      SEGHI0
        3200      SEGLO1
        422F      SEGHI1
        4400      SEGLO2
        43FF      SEGHI2
```

PROGRAM LISTING OF PBD33J - BUS PREEMPT CONTROL UNIT
PROGRAM FOR MINNEAPOLIS INSTALLATION



```
$$    PB33J ENTERED CS-F.0 AT 15.846 FROM REMOTE  0-08-01

0001  $       SNUMB   PB33J
0002  $       IDENT   D00391-IMP16XREF
0003  $$      USERID  D00391$##
0004  $       OPTION  FORTRAN,NOMAP
0005  $$      SELECT  G02771/NATIONAL/POINTER
0006* $       OPTIONS FORTRAN,NOMAP
0007* $$      SELECT  G02771/NATIONAL/ACCOUNT
0008* $       OBJECT                                  Y09.711032175......00
0010* $$      SELECT  LIBRARY/SURCHK/A3XXX
0011* $       OBJECT                                  G13.092021475A3XXX000
0013* $       EXECUTE
0014* $       LIMITS  01,4K
0015* $       SYSOUT  P*,ORG
0016* $       OPTIONS FORTRAN,NOMAP
0017* $$      SELECT  G02771/NATIONAL/ASMIMP16
0018* $       OBJECT                                  Y10.768070275BINSCH00
0020* $       OBJECT                                  Y10.769070275STRING00
0022* $       OBJECT                                  Y10.769070275LABEL000
0024* $       OBJECT                                  Y10.770070275LCVAL000
0026* $       OBJECT                                  Y10.770070275I2HEX000
0028* $       OBJECT                                  Y10.771070275DEC2I000
0030* $       OBJECT                                  Y10.771070275UNPACK00
0032* $       OBJECT                                  Y10.772070275SYMBOL00
0034* $       OBJECT                                  Y10.772070275HEX2I000
0036* $       OBJECT                                  Y10.773070275ASC2I000
0038* $       OBJECT                                  Y10.773070275FORM0000
0040* $       OBJECT                                  Y10.773070275NXCHAR00
0042* $       OBJECT                                  Y10.774070275PSECT000
0044* $       OBJECT                                  Y10.774070275REMOVE00
0046* $       OBJECT                                  Y10.775070275OR000000
0048* $       OBJECT                                  Y10.775070275AND00000
0050* $       OBJECT                                  Y10.775070275INSERT00
0052* $       OBJECT                                  Y10.776070275ERRCOL00
0054* $       OBJECT                                  Y10.776070275EVAL0000
0056* $       OBJECT                                  Y10.777070275DATA0000
0058* $       OBJECT                                  Y10.777070275ASSIGN00
0060* $       OBJECT                                  Y10.777070275PRFORM00
0062* $       OBJECT                                  Y10.778070275LCNTL000
0064* $       OBJECT                                  Y10.778070275MEMREF00
0066* $       OBJECT                                  Y10.778070275MISCIN00
0068* $       OBJECT                                  Y10.779070275LCMOD000
0070* $       OBJECT                                  Y10.779070275XMTREC00
0072* $       OBJECT                                  Y10.779070275NXPAGE00
```

```
007   $      BJE                                                  Y10.  702.........
0078* $      OBJECT                                               Y10.780070275ACNTL000
0080* $      OBJECT                                               Y10.781070275LIST0000
0082* $      OBJECT                                               Y10.781070275REGINT00
0084* $      OBJECT                                               Y10.782070275INST0000
0086* $      OBJECT                                               Y10.782070275000000000
0089* $      OBJECT                                               Y10.782070275SYMVAL00
0090* $      OBJECT                                               Y10.783070275EXTSYM00
0092* $      OBJECT                                               Y10.783070275NXTSYM00
0094* $      OBJECT                                               Y10.783070275ADDSYM00
0096* $      OBJECT                                               Y10.784070275ADPART00
0098* $      OBJECT                                               Y10.784070275ERREPT00
0100* $      OBJECT                                               Y10.784070275DIRECT00
0102* $      OBJECT                                               Y10.785070275BOCNTL00
0104* $      OBJECT                                               Y10.785070275GENRLM00
0106  $      EXECUTE
0107  $      SET      6,19
0108  $      LIMITS   15,23K,,7500
0109  $      REMOTE   06
0110  $      FILE     10,X1S,40L
0111  $$     PRMFL    09,R/W,S,D00391/AOUT
0112  $$     SELECT   D00391/EAC0826$######
0113* $      INCODE   IBMEL
0114  $      INCODE   IBMEL
0115  $$     SELECT   D00391/EBP0826$######
0116* $      INCODE   IBMEL
0117  $      INCODE   IBMEL
0118  $$     SELECT   D00391/EER1001$######
0119* $      INCODE   IBMEL
0120  $      INCODE   IBMEL
0121  $$     SELECT   D00391/EES0826$######
0122* $      INCODE   IBMEL
0123  $      INCODE   IBMEL
0124  $$     SELECT   D00391/EPP0819$######
0125* $      INCODE   IBMEL
0126  $      INCODE   IBMEL
0127  $$     SELECT   D00391/ETP0826$######
0128* $      INCODE   IBMEL
0129  $      INCODE   IBMEL
0130  $$     SELECT   D00391/EPR0826$######
0131* $      INCODE   IBMEL
0132  $$     SELECT   D00391/EVC1001$######
0133* $      INCODE   IBMEL
0134  $      INCODE   IBMEL
0135  $$     SELECT   D00391/EEB0826$######
0136* $      INCODE   IBMEL
0137  $      INCODE   IBMEL
0138  $$     SELECT   D00391/EBX0826$######
0139* $      INCODE   IBMEL
0140  $      INCODE   IBMEL
0141  $$     SELECT   D00391/EDB1010$######
0142* $      INCODE   IBMEL
0143  $      IF       /19,ENDJOB
0144  $      OPTION   FORTRAN,NOMAP
0145  $      LIBRARY  L1
0146  $$     SELECT   G02771/NATIONAL/XREF
0147* $      OBJECT                                               Y16.706071475......00
0149  $      EXECUTE
0150  $      LIMIT    ,20K
0151  $$     PRMFL    L1,R,R,USERLIB/UTILITY/BUTIL
0152  $      FILE     10,X1R
0153  $      FILE     11,X2R,40L
0154  $      FILE     S1,X3R,44R
0155  $      ENDJOB
  TOTAL CARD COUNT THIS JOB = 005912
```

```
TOTAL CARD COUNT THIS JOB = 005912

 * BEGIN ACTIVITY -01-  GELOAD   10/10/75   SW=010000000000
  * NORMAL TERMINATION     AT 011743 I=5020 SW=010000000000

      START 15.953      LINES     21      PROC  0.0001      I/O   0.000    IU  5  MEMORY    5K
      STOP  15.954      LIMIT   5000      LIMIT 0.0100      LIMIT          CU  5  M*T      44
      SWAP   0.000
      LAPSE  0.001   FC D TYPE     BUSY    IP/AT    FP/RT    IS/#C MS/#E    ADDRESS T#

                     R* R D191 *     12        0        0        1     1    0-08-03
                     P*  SYOUT
                     L* R D191 *    338        0        0      528   528R   0-08-05

       LIST     21 LINES AT STA.  G5

RESOURCE UNITS USED, ACTIVITY -01-      0.00
***RESOURCE UNITS USED, JOB TOTAL-      0.00


 * BEGIN ACTIVITY -02-  GELOAD   10/10/75   SW=014000200000
  * NORMAL TERMINATION     AT 013613 I=5020 SW=014000200000

      START 16.009      LINES   6152      PROC  0.0731      I/O   0.010    IU  5  MEMORY   23K
      STOP  16.531      LIMIT   7500      LIMIT 0.1500      LIMIT          CU  5  M*T     41187
      SWAP   0.066
      LAPSE  0.523   FC D TYPE     BUSY    IP/AT    FP/RT    IS/#C MS/#E    ADDRESS T#

                     I* R D191 *   18773        0      252      252   252    0-08-03
                     R* R D191 *     917        0        0       46    46    0-08-03
                     06  SYOUT
                     10 S D191 *    2963        0        0      480   480    0-08-04
                     09 R D191 P     861        0       18       20    20    0-08-05
                     P*  SYOUT
                     L* R D191 *    1184        0        0      528   528R   0-08-05

       LIST     22 LINES AT STA.  G5
       RC-06  6130 LINES AT STA.  G5

RESOURCE UNITS USED, ACTIVITY -02-      2.82
***RESOURCE UNITS USED, JOB TOTAL-      2.82


 * BEGIN ACTIVITY -03-  GELOAD   10/10/75   SW=000000200000
SORT ENGAGED - VERSION: F/8
            FILE 11 UNSUITABLE FOR COLLATION.
MEMORY: 023416  LINKS: 00044 INPUT: 0320/DOUBLE  OUTPUT: 0320/DOUBLE  COLLATION: 0362/DOUBLE  TOURNAMENT: 000541 ENTRIES
            END OF FILE ON 10.  RECORDS READ = 00006871.  RECORDS ACCEPTED = 00006871.  RECORDS DELETED = 00000000.
            MERGING 000007 STRINGS 08 WAYS.
            LINK UTILIZATION.       ALLOCATED 00044   BORROWED 00000   USED 00008
            RECORDS INPUT = 00006871.  RECORDS OUTPUT = 00006871.
SORT TERMINATES.
  * NORMAL TERMINATION     AT 013403 I=5020 SW=000000200000

      START 16.533      LINES   2113      PROC  0.0050      I/O   0.004    IU  5  MEMORY   20K
      STOP  16.547      LIMIT   5000      LIMIT 0.0500      LIMIT          CU  5  M*T     1126
      SWAP   0.000
      LAPSE  0.014   FC D TYPE     BUSY    IP/AT    FP/RT    IS/#C MS/#E    ADDRESS T#

                     10 R D191 *    1489        0        0      480   480    0-08-04
                     P* R D191 *      63        0        0        3     3    0-08-03
                     L1 R D191 P     66        0        0      120   120R   0-08-03
                     11 R D191 *    3525        0       87      480   480    0-08-02
```

P* SYOUT

R * 71 0 5 0. 05

LIST 26 LINES AT STA. G5
RC-06 2087 LINES AT STA. G5

RESOURCE UNITS USED, ACTIVITY -03- 0.28
***RESOURCE UNITS USED, JOB TOTAL- 3.10

SNUMB = PB33J, ACTIVITY # = 01, REPORT CODE = 74, RECORD COUNT = 000021

```
PB33J 01  10-10-75   15.953                                                                    PAGE      1
  ORIGIN   DATE MODULE ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION

                         SUBPROGRAMS INCLUDED IN DECK.

                  $       OPTION  FORTRAN,NOMAP
                  $       OPTIONS FORTRAN,NOMAP

                         SUBPROGRAMS OBTAINED FROM SYSTEM LIBRARY

                                        RANGE                SIZE
                  ALLOCATED CORE    000000 THRU 011777      012000
                     RELOCATABLE    007062 THRU 011777      002716
                  $       SYSOUT  P*,ORG

                  FCB AND BUFFER SPACE
                     AVAILABLE      000101 THRU 007061      006761
                     FILE CTRL BLKS 006732 THRU 007062      000131
                     MAXIMUM BUFFER SPACE REQUIRED          001202

                       3K, IS THE MINIMUM MEMORY NEEDED TO LOAD THIS ACTIVITY WITH ALL FILES OPEN     730517 F/8
                  000204 LOCATIONS REQUIRED FOR LOAD TABLE
                  EXECUTION PROGRAM ENTERED AT  011772   THROUGH  .FSETU
```

SNUMB = P833J, ACTIVITY # = 02, REPORT CODE = 74, RECORD COUNT = 000022

```
P833J 02  10-10-75   16.009                                                                    PAGE      1
  ORIGIN   DATE MODULE ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION

                         SUBPROGRAMS INCLUDED IN DECK.

                  $       OPTIONS FORTRAN,NOMAP

                         SUBPROGRAMS OBTAINED FROM SYSTEM LIBRARY

                                          RANGE                SIZE
                  ALLOCATED CORE     000000 THRU 055777       056000
                     RELOCATABLE     004422 THRU 055777       051356
                  $       REMOTE  06
                  $       FILE    10,X1S,40L
                  $       PRMFL   09,R/W,S,D00391/AOUT

                  FCB AND BUFFER SPACE
                     AVAILABLE       000101 THRU 004421       004321
                     FILE CTRL BLKS  004170 THRU 004422       000233
                     MAXIMUM BUFFER SPACE REQUIRED            003105

                      23K, IS THE MINIMUM MEMORY NEEDED TO LOAD THIS ACTIVITY WITH ALL FILES OPEN     730517 F/8
                  001446 LOCATIONS REQUIRED FOR LOAD TABLE
                  EXECUTION PROGRAM ENTERED AT  033506   THROUGH  .FSETU
```

SNUMB = PB33J, ACTIVITY # = 02, REPORT CODE = 06, RECORD COUNT = 006130

```
1 0000          .TITLE PBD33J,'...P B D 3 3 J...'
```

```
0000                    .LIST   LAC
0000          ;
0000          ;                    ... A S S E M B L Y   C O N S T A N T S ...
0000          ;
0000 0000 A AC0     =       0               ; ACCUMULATOR 0
0000 0001 A AC1     =       1               ; ACCUMULATOR 1
0000 0002 A AC2     =       2               ; ACCUMULATOR 2
0000 0003 A AC3     =       3               ; ACCUMULATOR 3
0000          ;
0000 0001 A FC1     =       X'01            ; FUNCTION CODE 1, WRITE WORD 1
0000 0002 A FC2     =       X'02            ; FUNCTION CODE 2, WRITE WORD 2
0000 0003 A FC3     =       X'03            ; FUNCTION CODE 3, READ WORD 1
0000 0004 A FC4     =       X'04            ; FUNCTION CODE 4, READ WORD 2
0000          ;
0000 0010 A FC10    =       X'10            ; FUNCTION CODE 10, READ THUMBWHEEL 6
0000 0011 A FC11    =       X'11            ; FUNCTION CODE 11, READ THUMBWHEEL 1
0000 0012 A FC12    =       X'12            ; FUNCTION CODE 12, READ THUMBWHEEL 2
0000 0013 A FC13    =       X'13            ; FUNCTION CODE 13, READ THUMBWHEEL 3
0000 0014 A FC14    =       X'14            ; FUNCTION CODE 14, READ THUMBWHEEL 4
0000 0015 A FC15    =       X'15            ; FUNCTION CODE 15, READ THUMBWHEEL 5
0000          ;
0000          ;                                   NOTE: FUNCTION CODES ENDING IN
0000          ;                                         6 CANNOT BE USED FOR RIN
0000          ;                                         INSTRUCTIONS DUE TO
0000          ;                                         CONFLICT WITH TTY ROUTINE
0000          ;
0000 0017 A FC17    =       X'17            ; FUNCTION CODE 17, READ THUMBWHEEL 7
0000          ;
0000 0041 A FC41    =       X'41            ; FUNCTION CODE 41, RESET PULSE
0000 0042 A FC42    =       X'42            ; FUNCTION CODE 42, START PULSE
0000 0043 A FC43    =       X'43            ; FUNCTION CODE 43, STOP PULSE
0000 0044 A FC44    =       X'44            ; FUNCTION CODE 44, TURN ON LIGHT 1
0000 0045 A FC45    =       X'45            ; FUNCTION CODE 45, TURN OFF LIGHT 1
0000 0046 A FC46    =       X'46            ; FUNCTION CODE 46, TURN ON LIGHT 2
0000 0047 A FC47    =       X'47            ; FUNCTION CODE 47, TURN OFF LIGHT 2
0000          ;
0000          ;                    ... DISPLACEMENT CONSTANTS ...
0000 FFF4 A DM12    =       -12
0000 FFF9 A DM7     =       -7
0000 FFFC A DM4     =       -4
0000 FFFE A DM2     =       -2
0000 FFFF A DM1     =       -1
0000 0000 A D0      =       0
0000 0001 A D1      =       1
0000 0002 A D2      =       2
0000 0003 A D3      =       3
0000 0004 A D4      =       4
0000 0005 A D5      =       5
0000 0006 A D6      =       6
0000 0007 A D7      =       7
0000 0008 A D8      =       8
0000 0009 A D9      =       9
```

```
0000 000A A D10     =     10
0000 000B A D11     =     11
0000 000C A D12     =     12
0000 000D A D13     =     13
0000 000E A D14     =     14
0000 000F A D15     =     15
0000 0010 A D16     =     16
0000 0011 A D17     =     17
0000 0012 A D18     =     18
0000 0013 A D19     =     19
0000 0014 A D20     =     20
0000 0015 A D21     =     21
0000 0016 A D22     =     22
0000 0017 A D23     =     23
0000 0018 A D24     =     24
0000 0019 A D25     =     25
0000 001A A D26     =     26
0000 0074 A D116    =     116
0000 0076 A D118    =     118
0000          ;
0000 0004 A DETS    =     4              ; NUMBER OF DETECTORS FOR PBD33J .......
0000          ;
0000 0019 A DPMD    =     25             ; MINIMUM DURATION OF A PREEMPT
0000          ;                                ( 0.1 SEC UNITS)
0000          ;
0000          ;
0000          ;                  ... IMMEDIATE DATA CONSTANTS ...
0000 FF92 A CM110   =     -110
0000 FF9C A CM100   =     -100
0000 FFEC A CM20    =     -20
0000 FFF0 A CM16    =     -16
0000 FFF6 A CM10    =     -10
0000 FFFA A CM6     =     -6
0000 FFFE A CM2     =     -2
0000 FFFF A CM1     =     -1
0000 0000 A C0      =     0
0000 0001 A C1      =     1
0000 0002 A C2      =     2
0000 0003 A C3      =     3
0000 0004 A C4      =     4
0000 0005 A C5      =     5
0000 0006 A C6      =     6
0000 0007 A C7      =     7
0000 0008 A C8      =     8
0000 000F A C15     =     15
0000 0030 A C48     =     48
0000 007D A C125    =     125
```

```
0000                    .PAGE
0000          ;
0000          ;                    ... BOC CONDITION CODES ...
0000 0001 A CCEZ    =       X'1              ; CONDITION CODE 1 (AC0).EQ.0
0000 0002 A CCZP    =       X'2              ; CONDITION CODE 2 (AC0) ZERO, POSITIVE
0000 0003 A CCB0    =       X'3              ; CONDITION CODE 3 AC0 BIT 0 = 1
0000 0004 A CCB1    =       X'4              ; CONDITION CODE 4 AC0 BIT 1 = 1
0000 0005 A CCNZ    =       X'5              ; CONDITION CODE 5 (AC0).NE.0
0000 0008 A CCSF    =       X'8              ; CONDITION CODE 8 STACK FULL
0000 000B A CCZN    =       X'B              ; CONDITION CODE 11 (AC0).LE.0
0000 000C A CCCU    =       X'C              ; CONDITION CODE 12 CCU IN SYSTEM
0000 000D A CCPH    =       X'D              ; CONDITION CODE 13 INITIALIZATION
0000                                         ;    PSEUDO HALT
0000 000E A CCCF    =       X'E              ; CONDITION CODE 14 CATCH ON THE FLY
0000          ;
0000          ;                    ... CONTROL FLAGS ...
0000 0001 A INEN    =       1                ; INTERRUPT ENABLE FLAG
0000 0002 A SELF    =       2                ; SELECT FLAG
0000          ;
0000          ;
```

```
 125 0000                .LIST   LBP
 126 0000          ;
 127 0000          ;                     ... B A S E   P A G E ...
 128 0000                .BSECT
 129 0000          ;                     ... TRANSFER TO RESTART INITIALIZATION ROUTINE...
 130 0000 2420 A           JMP     @AERSI
 131 0001          ;
 132 0001          ;                     ... TRANSFER TO GENERAL INTERRUPT SERVICING ROUTINE
 133 0001 2421 A           JMP     @AEGIS
 134 0002          ;
```

```
 137 0002                    .LIST   LBP
 138 0002                ;
 139 0002                    .ASECT
 140 0000 0020 A             .=X'20
 141 0020 1000 A AERSI:      .WORD   ERSI        ; RESTART INITIALIZATION ROUTINE
 142 0021 1041 A AEGIS:      .WORD   EGIS        ; GENERAL INTERRUPT SERVICING ROUTINE
 143 0022 10C2 A AECCU:      .WORD   ECCU        ; CCU INITIALIZATION ROUTINE
 144 0023 10E0 A AEMAD:      .WORD   EMAD        ; INITIAL RAM ADDRESS TEST ROUTINE
 145 0024 1E00 A AEBKD:      .WORD   EBKD        ; BACKGROUND PROGRAM MONITOR
 146 0025 10BF A AECER:      .WORD   ECER        ; CLOCK ERROR ROUTINE
 147 0026 10F3 A AESCH:      .WORD   ESCH        ; EXECUTIVE SCHEDULING ROUTINE
 148 0027 1200 A AEDIS:      .WORD   EDIS        ; DISCONNECT MONITOR
 149 0028 1212 A AECOM:      .WORD   ECOM        ; COMMAND MONITORING ROUTINE
 150 0029 123F A AESYN:      .WORD   ESYN        ; SYNCHRONIZATION ROUTINE
 151 002A 1282 A AEMIC:      .WORD   EMIC        ; INTERCONNECT DATA MONITOR ROUTINE
 152 002B 12A3 A AETIM:      .WORD   ETIM        ; EXECUTIVE TIMING ROUTINE
 153 002C 131B A AEEOC:      .WORD   EEOC        ; END OF CYCLE ROUTINE
 154 002D 12E0 A AESDW:      .WORD   ESDW        ; STATUS DISPLAY ROUTINE
 155 002E 12B2 A AEDET:      .WORD   EDET        ; DETECTOR MONITORING ROUTINE
 156 002F 110F A AEADC:      .WORD   EADC        ; AUTODISCONNECT ROUTINE
 157 0030 1A00 A APMON:      .WORD   PMON        ; PREEMPT MONITOR ROUTINE
 158 0031 1C19 A AVCLAS:     .WORD   VCLAS       ; VEHICLE CLASSIFICATION ROUTINE
 159 0032 1AE6 A APREQ:      .WORD   PREQ        ; PREEMPT REQUEST ROUTINE
 160 0033 1A88 A APTER:      .WORD   PTER        ; PREEMPT TERMINATION ROUTINE
 161 0034 1A4E A APCIM:      .WORD   PCIM        ; ROUTINE USED TO RESTORE CI
 162 0035 1800 A ATPEX:      .WORD   TPEX        ; TIMING PLAN EXECUTION ROUTINE
 163 0036 18C9 A ATCOPY:     .WORD   TCOPY       ; TIMING PLAN COPY ROUTINE
 164 0037 1866 A ATNCY:      .WORD   TNCY        ; NEXT TIMING PLAN CYCLE ROUTINE
 165 0038 1896 A ATDIAL:     .WORD   TDIAL       ; INIT ENTRY TO TNCY ROUTINE
 166 0039 1F28 A AXRTC:      .WORD   XRTC        ; RTC DATA OUTPUT SEQUENCE ROUTINE
 167 003A 1F32 A AXWDT:      .WORD   XWDT        ; RESET WATCHDOG TIMER ROUTINE
 168 003B 1F36 A AXSDC:      .WORD   XSDC        ; FORMAT OUTPUT COMMANDS ROUTINE
 169 003C 1F00 A ABRTC:      .WORD   BRTC        ; RTC DATA INPUT SEQUENCE ROUTINE
 170 003D 1143 A ACOTF:      .WORD   COTF        ; CATCH ON THE FLY ROUTINE FOR CHECKOUT
 171 003E                ;
 172 003E                ;                   ... PROG. PANEL PROGRAM POINTERS ...
 173 003E 1F0D A ABPAN:      .WORD   BPAN        ; PROG. PANEL PARAMETER INPUT ROUTINE
 174 003F 1400 A AEPAN:      .WORD   EPAN        ; PROG. PANEL INITIALIZATION ROUTINE
 175 0040 146E A AEPPM:      .WORD   EPPM        ; PROG PANEL MONITOR ROUTINE
 176 0041 14C4 A AEPP1:      .WORD   EPP1        ; ROUTINE TO PROCESS PROG. PANEL PLAN 1
 177 0042 1578 A AEPP2:      .WORD   EPP2        ; ROUTINE TO PROCESS PROG. PANEL PLAN 2
 178 0043 162C A AEPP3:      .WORD   EPP3        ; ROUTINE TO PROCESS PROG. PANEL PLAN 3
 179 0044 16E0 A AEPUP:      .WORD   EPUP        ; UPDATE PROG. PANEL DATA
 180 0045 1733 A AEPBI2:     .WORD   EPBI2       ; CONVERT 2 BINARY-CODED DIGITS
 181 0046 1726 A AEPBI3:     .WORD   EPBI3       ; CONVERT 3 BINARY-CODED DIGITS
 182 0047                ;
 183 0047 174D A AEM10:      .WORD   EM10        ; ROUTINE TO MULTIPLY AN INTEGER BY 10
 184 0048 1752 A AEM24:      .WORD   EM24        ; ROUTINE TO MULTIPLY AN INTEGER BY 24
 185 0049                ;
 186 0049 1340 A AERE0:      .WORD   ERE0        ; ERROR RECORDING ROUTINE
 187 004A 1349 A AERE1:      .WORD   ERE1        ; ERROR RECORDING ROUTINE
 188 004B 1352 A AERE2:      .WORD   ERE2        ; ERROR RECORDING ROUTINE
```

BASE PAGE - PROGRAM ENTRY POINTS

```
  189 004C 135B A AERE3:  .WORD   ERE3            ; ERROR RECORDING ROUTINE
  190 004D 1364 A AERE4:  .WORD   ERE4            ; ERROR RECORDING ROUTINE
  191 004E 136D A AERE5:  .WORD   ERE5            ; ERROR RECORDING ROUTINE
  192 004F 1376 A AERE6:  .WORD   ERE6            ; ERROR RECORDING ROUTINE
  193 0050 137F A AERE7:  .WORD   ERE7            ; ERROR RECORDING ROUTINE
  194 0051 1388 A AERE8:  .WORD   ERE8            ; ERROR RECORDING ROUTINE
  195 0052 1391 A AERE9:  .WORD   ERE9            ; ERROR RECORDING ROUTINE
  196 0053 139A A AERE10: .WORD   ERE10           ; ERROR RECORDING ROUTINE
  197 0054 13A3 A AERE11: .WORD   ERE11           ; ERROR RECORDING ROUTINE
  198 0055 13AC A AERE12: .WORD   ERE12           ; ERROR RECORDING ROUTINE
  199 0056        ;
  200 0056 1F97 A AXLON1: .WORD   XLON1           ; ROUTINE TO TURN STATUS LIGHT ON
  201 0057 1F9A A AXLOF1: .WORD   XLOF1           ; ROUTINE TO TURN STATUS LIGHT OFF
  202 0058 1F9D A AXLON2: .WORD   XLON2           ; ROUTINE TO TURN STATUS LIGHT ON
  203 0059 1FA0 A AXLOF2: .WORD   XLOF2           ; ROUTINE TO TURN STATUS LIGHT OFF
  204 005A        ;
  205 005A        ;                   ... SELF TEST ENTRY POINTS ...
  206 005A 1E0C A ASMAD:  .WORD   SMAD            ; RAM ADDRESS TEST
```

```
005B                    .LIST   LBP
005E 0068 A             .=X'68
0068                ;
0068                ; DATA INPUT CPC DATA BASE POINTERS
0068                ;
0068 3100 A ABBUF:  .WORD   BBUF            ; DATA INPUT CPC DATA BASE
0069 3100 A ABDIN:  .WORD   BDIN            ; DISCRETE INPUT WORD
006A 32BE A ABERR:  .WORD   BERR            ; ERROR BUFFER
006B                ;
006B                ; DATA OUTPUT CPC DATA BASE POINTERS
006B                ;
006B 3119 A AXBUF:  .WORD   XBUF            ; DATA OUTPUT CPC DATA BASE
006C 32BF A AXERR:  .WORD   XERR            ; ERROR BUFFER
006D                ;
006D                ; PREEMPT CPC DATA BASE POINTERS
006D                ;
006D 311E A APBUF:  .WORD   PBUF            ; PREEMPT CPC DATA BASE
006E 311E A APIP:   .WORD   PIP                     ; PREEMPT IN PROGRESS FLAG
006F 311F A APTEM:  .WORD   PTEM                    ; TEMPORARY STORAGE LOCATION
0070 3120 A APTCP:  .WORD   PTCP            ; ADDRESS OF PRIMARY CONTRACTIBLE INT
0071 3121 A APTCS:  .WORD   PTCS            ; ADDRESS OF SECONDARY CONTRACTIBLE INT
0072 3122 A APTEI:  .WORD   PTEI            ; ADDRESS OF EXTENDIBLE INT
0073 3123 A APMIF:  .WORD   PMIF                    ; PREEMPT MONITOR INDEX FLAG
0074 3126 A APFREQ. .WORD   PFREQ                   ; PREEMPT REQUEST FLAG
0075 3127 A APMDT:  .WORD   PMDT                    ; PREEMPT MINIMUM DURATION TIMER
0076 312B A APEMAX: .WORD   PEMAX           ; MAXIMUM EXTENSION FOR PREEMPT
0077 32C4 A APERR:  .WORD   PERR            ; PREEMPT ERROR BUFFER
0078 3128 A APTAVT: .WORD   PTAVT           ; UNEXPIRED PREEMPT EXTENSION TIME
0079 3129 A APTITE: .WORD   PTITE           ; DISP OF INT TO RECEIVE UNEXPIRED
007A                                        ;    PREEMPT EXTENSION TIME
007A 312A A APTPMT: .WORD   PTPMT           ; BASE ADDRESS OF MASTER TIMING PLAN
007B                ;
007B 3130 A AVCBT:  .WORD   VCBT            ; TIMER FOR RECENT BUS CLASS.
007C 3131 A AVCVC:  .WORD   VCVC            ; VEHICLE COUNTERS (ONE PER DETECTOR)
007D 3165 A AVCLOG: .WORD   VCLOG                   ; BEGINNING LOCATION OF VEHICLE LOG
007E 312F A AVCDT:  .WORD   VCDT                    ; LOCATION OF DETECTOR INDEX WORD
007F 3151 A AVCDB:  .WORD   VCDB            ; TEMPORARY DATA BASE
0080 3000 A AVCSDB: .WORD   VCSDB           ; BUS DETECTOR SIGNATURE DATA BASE
0081                ;
0081                ;TIMING PLAN CPC DATA BASE POINTERS
0081                ;
0081 3171 A ATBUF:  .WORD   TBUF                    ; BEGINNING LOC OF TIMING PLAN DATA BASE
0082 3171 A ATCIWC: .WORD   TCIWC           ; CURRENT COMMAND INDEX WORD
0083 3172 A ATCDS:  .WORD   TCDS                    ; CURRENT DIAL SETTING--1, 2, OR 3
0084 3173 A ATIN:   .WORD   TIN                     ;CURRENT INTERVAL INDEX
0085 3174 A ATINT:  .WORD   TINT                    ; CURRENT INTERVAL TIMER
0086 3175 A ATFST:  .WORD   TFST                    ; WAIT FOR SYNC START FLAG
0087 3176 A ATEOC:  .WORD   TEOC                    ; END OF CYCLE FLAG
0088 3177 A ATEMP:  .WORD   TEMP                    ; TEMPORARY LOCATION
0089 3178 A ATDWL:  .WORD   TDWL                    ; MAXIMUM WAIT FOR SYNC START DWELL
008A 008A A ATPP:   .WORD   ATPP            ; POINTER TO MASTER TP POINTERS
008B                                        ;    (MUST PRECEDE ATPM1,ATPM2,ATPM3)
```

```
 261 008B 317B A ATPM1:  .WORD   TPM1            ; BEGINNING LOC OF MASTER TP, DIAL 1
 262 008C 318F A ATPM2:  .WORD   TPM2            ; BEGINNING LOC OF MASTER TP, DIAL 2
 263 008D 31A3 A ATPM3:  .WORD   TPM3            ; BEGINNING LOC OF MASTER TP, DIAL 3
 264 008E 31B7 A ATNTP:  .WORD   TNTP            ; BEGINNING LOC OF NEXT TP TABLE
 265 008F 31CB A ATCTP:  .WORD   TCTP            ; BEGINNING LOC OF CURRENT TP TABLE
 266 0090 32D9 A ATERR:  .WORD   TERR            ; TIMING PLAN CPC ERROR FLAGS, COUNTERS,
 267 0091                                        ; DATA
 268 0091        ;
 269 0091        ; TIMING PLAN TABLES POINTERS
 270 0091        ;
 271 0091 18D3 A ATSCI:  .WORD   TSCI            ; SYNC.CONTRACTIBLE INTERVAL
 272 0092 18D4 A ATHI:   .WORD   THI             ; TRANSFER/HOLD INTERVAL
 273 0093 18D5 A ATAI1:  .WORD   TAI1            ; FIRST ADJ INT INDEX
 274 0094 18D6 A ATAI2:  .WORD   TAI2            ; SECOND ADJ INT INDEX
 275 0095 18D7 A ATIMX:  .WORD   TIMX            ; MAXIMUM VALUE FOR TIN
 276 0096 18D8 A ATECI:  .WORD   TECI            ; BEGINNING LOC OF EXTENDIBLE/
 277 0097                                        ; CONTRACTIBLE INTERVAL DATA TABLES
 278 0097 1918 A ATCIW:  .WORD   TCIW            ; BEGINNING LOC OF COMMAND INDEX WORD
 279 0098                                        ; TABLE
 280 0098 192C A ATPTAB: .WORD   TPTAB           ; BEGINNING LOC OF TIMING PLAN TABLES
 281 0099 1967 A ATPE:   .WORD   TPE             ; END LOCATION OF TIMING PLAN TABLE ROM
 282 009A        ;
 283 009A        ;EXECUTIVE CPC DATA BASE POINTERS
 284 009A        ;
 285 009A 31DF A AEBUF:  .WORD   EBUF            ; BEGINNING LOC OF EXECUTIVE CPC DATA
 286 009B                                        ; BASE
 287 009B 31E1 A AETCY:  .WORD   ETCY            ; TIMING PLAN CYCLE TIMER
 288 009C 31E0 A AETST:  .WORD   ETST            ; WAIT FOR SYNC START DWELL TIMER
 289 009D 31E4 A AEPST:  .WORD   EPST            ; START PULSE INDICATOR
 290 009E 31E5 A AEPDT:  .WORD   EPDT            ; START PULSE DURATION TIMER
 291 009F 32DE A AEERR:  .WORD   EERR            ; ERROR BUFFER
 292 00A0        ;
 293 00A0 31E6 A AECMF:  .WORD   ECMF            ; TEMPORARY FLAG FOR ECOM
 294 00A1        ;
 295 00A1 31E7 A AESYD:  .WORD   ESYD            ; SYNCH DATA BUFFER
 296 00A2        ;
 297 00A2 31F9 A AER123: .WORD   ER123           ; RESET SELECT INTERNAL VALUE
 298 00A3 31FA A AERNO:  .WORD   ERNO            ; RESET SELECT DATA BUFFER
 299 00A4        ;
 300 00A4 31FD A AED23:  .WORD   ED23            ; DIAL SELECT INTERNAL VALUE
 301 00A5 31FE A AEDNO:  .WORD   EDNO            ; DIAL SELECT DATA BUFFER
 302 00A6 3201 A AEDMIT: .WORD   EDMIT           ; DETECTOR MONITORING INTERVAL TIMER
 303 00A7 3202 A AEDETT: .WORD   EDETT           ; TEMP STORAGE FOR DET MONITORING
 304 00A8 333C A AEDERR: .WORD   EDERR           ; DETECTOR ERROR BUFFER
 305 00A9 3C00 A AERAM:  .WORD   X'3C00          ; FIRST LOCATION IN FREE RAM (3C00-3FFF)
```

```
00AA                    .LIST   LBP
00AA          ;
00AA 3203 A AESAV:   .WORD   ESAV          ; GENERAL INTERRUPT SAVE AREA POINTERS
00AB 3205 A AESV2:   .WORD   ESV2
00AC 3207 A AESVF:   .WORD   ESVF
00AD 3218 A AESVS:   .WORD   ESVS
00AE          ;
00AE 3219 A ACSAV:   .WORD   CSAV            ; SNAPSHOT SAVE AREA
00AF 321B A ACSV2:   .WORD   CSV2
00B0 321D A ACSVF:   .WORD   CSVF
00B1 322E A ACSVS:   .WORD   CSVS
00B2          ;
00B2 3231 A AISV2:   .WORD   ISV2          ; STACK FULL SAVE AREA POINTERS
00B3 3233 A AISTK1:  .WORD   ISTK1
00B4 3234 A AISTK2:  .WORD   ISTK2
00B5 3235 A AISTK3:  .WORD   ISTK3
00B6 3236 A AISTK4:  .WORD   ISTK4
00B7          ;
00B7 3245 A AEDSV2:  .WORD   EDSV2         ; DISCONNECT SAVE AREA POINTERS
00B8 3247 A AEDSVF:  .WORD   EDSVF
00B9 3258 A AEDSVS:  .WORD   EDSVS
00BA          ;
00BA 3259 A ACTST:   .WORD   CTST            ; OPTIONAL USE SAVE AREA POINTER
```

```
00BB                    .LIST   LBP
00BB          ;
00BB          ;                    ... PROG. PANEL DATA POINTERS ...
00BB 3103 A ABPPD:   .WORD   BPPD                  ; PANEL DISCRETE INPUT WORD
00BC 3104 A ABPD1:   .WORD   BPD1                  ; TW SWITCH DATA INPUT      DIAL 1
00BD 3108 A ABPD2:   .WORD   BPD2                  ; TW SWITCH DATA INPUT      DIAL 2
00BE 3112 A ABPD3:   .WORD   BPD3                  ; TW SWITCH DATA INPUT      DIAL 3
00BF          ;
00BF 3261 A AEPD1:   .WORD   EPD1                  ; PANEL WORKING BUFFER,     DIAL 1
00C0 3268 A AEPD2:   .WORD   EPD2                  ; PANEL WORKING BUFFER,     DIAL 2
00C1 326F A AEPD3:   .WORD   EPD3                  ; PANEL WORKING BUFFER,     DIAL 3
00C2          ;
00C2 3276 A AEPCD1:  .WORD   EPCD1                 ; PANEL UPDATE BUFFER,      DIAL 1
00C3 3280 A AEPCD2:  .WORD   EPCD2                 ; PANEL UPDATE BUFFER,      DIAL 2
00C4 328A A AEPCD3:  .WORD   EPCD3                 ; PANEL UPDATE BUFFER,      DIAL 3
00C5          ;
00C5 3294 A AEPFT:   .WORD   EPFT                  ; FIXED INTERVAL SUMS
00C6          ;
00C6 329B A AEPUF:   .WORD   EPUF                  ; PANEL UPDATE FLAG
00C7 329C A AEPCF:   .WORD   EPCF            ; PROG PANEL MONITOR COMPUTATION FLAG
00C8 329D A AEPIR:   .WORD   EPIR            ; STATE OF PROG PANEL INPUT REQ SWITCH
00C9          ;
00C9          ;                    ... DATA CONSTANTS ...
00C9 146A A AEPCY:   .WORD   EPCY            ; MAXIMUM CYCLE LENGTH
00CA 146B A AEPIN1:  .WORD   EPIN1           ; LIMIT ON MAXIMUM EXTENSION
00CB 146D A AE100:   .WORD   E100            ; PERCENTAGE CONVERSION CONSTANT
00CC 146C A AE10:    .WORD   E10             ; CONSTANT FOR DIVISION
00CD          ;
00CD 3297 A AEP1E:   .WORD   EP1E            ; ERROR FLAG FOR PLAN 1
00CE 3298 A AEP2E:   .WORD   EP2E            ; ERROR FLAG FOR PLAN 2
00CF 3299 A AEP3E:   .WORD   EP3E            ; ERROR FLAG FOR PLAN 3
00D0 329A A AEPDVE:  .WORD   EPDVE           ; ERROR FLAG FOR DATA VALIDITY
00D1          ;
00D1 32EB A AEPEF1:  .WORD   EPEF1           ; PROG. PANEL ERROR DATA FOR PLAN 1
00D2 3306 A AEPEF2:  .WORD   EPEF2           ; PROG. PANEL ERROR DATA FOR PLAN 2
00D3 3321 A AEPEF3:  .WORD   EPEF3           ; PROG. PANEL ERROR DATA FOR PLAN 3
```

```
00D4                    .LIST   LBP
00D4          ;
00D4          ;                    ... RAM ADDRESS TEST DATA POINTERS ...
00D4 329E A ASSAD:  .WORD   SSAD            ; RAM ADDRESS TEST START ADDRESS
00D5 329F A ASEAD:  .WORD   SEAD            ; RAM ADDRESS TEST END ADDRESS
00D6          ;
00D6          ; END OF DATA BASE POINTER
00D6          ;
00D6 337C A ADEND:  .WORD   DEND                    ; END LOCATION OF DATA BASE
```

BASE PAGE - PERIPHERAL DEVICE ADDRESSES

```
 382 00D7                .LIST   LBP
 383 00D7 00E0 A         .=X'E0
 384 00E0                ;
 385 00E0                ; PERIPHERAL DEVICE ADDRESSES
 386 00E0                ;
 387 00E0 0080 A ALDU:   .WORD   1*128           ; LDU DEVICE ADDRESS
 388 00E1 0100 A ABLSMU: .WORD   2*128           ; BLSMU DEVICE ADDRESS
 389 00E2 0180 A ACMU:   .WORD   3*128           ; CMU DEVICE ADDRESS
 390 00E3 0200 A ATCP:   .WORD   4*128           ; TCP DEVICE ADDRESS
 391 00E4 0280 A ASDU:   .WORD   5*128           ; SDU DEVICE ADDRESS
 392 00E5 0300 A ADMU:   .WORD   6*128           ; DMU DEVICE ADDRESS
 393 00E6 0380 A ASDB:   .WORD   7*128           ; SDB DEVICE ADDRESS
 394 00E7 0400 A ARTC:   .WORD   8*128           ; RTC DEVICE ADDRESS
 395 00E8                ;
 396 00E8 1F80 A ACCU:   .WORD   63*128          ; CCU DEVICE ADDRESS
 397 00E9                ;
 398 00E9                ;                   ... PERIPHERAL DEVICE ADDRESSES FOR PROG. PANEL ...
 399 00E9 0500 A APPDU:  .WORD   10*128          ; DISCRETES
 400 00EA 0580 A APP1U:  .WORD   11*128          ; PLAN 1 PARAMETERS
 401 00EB 0600 A APP2U:  .WORD   12*128          ; PLAN 2 PARAMETERS
 402 00EC 0680 A APP3U:  .WORD   13*128          ; PLAN 3 PARAMETERS
```

```
00ED                    .LIST   LBP
00FD 00F0 A             .=X'F0
00F0          ;
00F0          ;                    ... COMMON HEXADECIMAL CONSTANTS ...
00F0 7FFF A H7FFF:   .WORD   X'7FFF          ; HEX CONSTANT (BIT 15 RESET)
00F1 3000 A H3000:   .WORD   X'3000          ; DATA BASE START ADDRESS
00F2 3FFF A H3FFF:   .WORD   X'3FFF          ; BITS 15, 14 RESET
00F3                                         ; RAM END ADDRESS
00F3 EC00 A HEC00:   .WORD   X'EC00          ; START ADDRESS OF UNUSED CCU RAM
00F4 ECCF A HECCF:   .WORD   X'ECCF          ; END ADDRESS OF UNUSED CCU RAM
00F5 0200 A H0200:   .WORD   X'0200          ; RTS DO INSTRUCTION
00F6 3BFF A H3BFF:   .WORD   X'3BFF          ; END ADDRESS FOR RTC RAM ADDRESS TEST
```

BASE PAGE - COMMON HEXADECIMAL CONSTANTS

```
  417 00F7                  .PAGE
  418 00F7                  .ASECT
  419 00F7 1000 A           .=X'1000
  420 1000                  ;
```

```
1000                    .LIST   LER
1000            ;
1000            ;                   ... E X E C U T I V E   C P C ...
1000            ;
1000            ;                   ... RESTART INITIALIZATION ROUTINE ...
1000            ERSI:
1000 1860 A             BOC     CCSF,ESTK       ; TEST FOR STACKFULL LINE = 1
1001 8CE7 A             LD      AC3,ARTC
1002 4C00 A             LI      AC0,C0
1003 0643 A             ROUT    FC43            ; ASSURE RTC STOPPED
1004 0641 A             ROUT    FC41            ; ASSURE RTC INTERRUPT PULSE RESET
1005            ;
1005 0980 A             PFLG    INEN            ; DISABLE INTERRUPTS
1006            ;
1006            ;                   ... INITIALIZE CCU SERVICING ROUTINE ...
1006 2C22 A             JSR     @AECCU
1007            ;
1007            ;                   ... INITIAL RAM ADDRESS TEST ...
1007 0714 A             CLRST   D4              ; CLEAR MEMORY ADDRESS TEST STATUS FLAG
1008 2C23 A             JSR     @AEMAD
1009            ;
1009 0715 A             CLRST   D5
100A 0716 A             CLRST   D6
100B 0717 A             CLRST   D7
100C            ;
100C 80F5 A             LD      AC0,H0200       ; RTS DO INSTRUCTION
100D B0A9 A             ST      AC0,@AERAM      ; STORE IN FIRST LOCATION OF FREE RAM
100E                                            ;    (ENTRY POINT VIA COTF)
100E            ;
100E            ;                   ... RESET CONFLICT MONITOR ...
100E 8CE2 A             LD      AC3,ACMU
100F 4C00 A             LI      AC0,C0
1010 0641 A             ROUT    FC41
1011            ;
1011            ;                   ... INITIALIZE CPU STACK ...
1011 4EF0 A             LI      AC2,CM16
1012 4700 A             PULL    AC3             ; PULL 16 WORDS FROM STACK
1013 4A01 A             AISZ    AC2,C1
1014 21FD A             JMP     .-2
1015            ;
1015            ;                   ... INITIALIZE STACK FOR BACKGROUND ROUTINES ...
1015 4FFF A             LI      AC3,CM1
1016 4300 A             PUSH    AC3
1017 4300 A             PUSH    AC3             ; PUSH TWO PROTECTION WORDS OF ALL ONES
1018            ;
1018 889A A             LD      AC2,AEBUF
1019 A200 A             ST      AC0,D0(AC2)     ; ZERO RTC COMPUTE FLAG
101A            ;
101A            ;                                   ZERO DATA BASE FROM VCSDB TO DEND
101A 4C00 A             LI      AC0,C0
101B 8880 A             LD      AC2,AVCSDB
101C A200 A EZDB:       ST      AC0,(AC2)
```

```
 475 101D 4A01 A          AISZ    AC2,C1
 476 101E 2100 A          JMP     .+1
 477 101F E8D6 A          SKG     AC2,ADEND
 478 1020 21FB A          JMP     EZDB
 479 1021          ;
 480 1021          ;                                  COPY TIMING PLAN TABLES FROM ROM TO READ/
 481 1021          ;                                  WRITE DATA BASE
 482 1021 8898 A          LD      AC2,ATPTAB
 483 1022 8C8B A          LD      AC3,ATPM1
 484 1023 8200 A ETCPY:   LD      AC0,(AC2)
 485 1024 A300 A          ST      AC0,(AC3)
 486 1025 4A01 A          AISZ    AC2,C1
 487 1026 4B01 A          AISZ    AC3,C1
 488 1027 E899 A          SKG     AC2,ATPE
 489 1028 21FA A          JMP     ETCPY
 490 1029          ;
 491 1029 889B A          LD      AC2,AETCY          ; INITIALIZE TIMING PLAN CYCLE TIMER
 492 102A 8115 A          LD      AC0,H0FFF          ;    MINIMUM TO A LARGE VALUE
 493 102B A202 A          ST      AC0,D2(AC2)        ;
 494 102C          ;
 495 102C          ;                  ... PROGRAMMABLE PANEL ROUTINE ...
 496 102C 2C3F A          JSR     @AEPAN
 497 102D          ;
 498 102D          ;                  ... READ DISCRETE INPUT WORDS, ETC. ...
 499 102D 2C3C A          JSR     @ABRTC
 500 102E          ;
 501 102E          ;                                  DETERMINE INITIAL DIAL SETTING AND COPY
 502 102E          ;                                  APPROPRIATE MASTER TIMING PLAN INTO CURRENT
 503 102E          ;                                  AND NEXT TIMING PLANS
 504 102E 2C38 A          JSR     @ATDIAL
 505 102F          ;
 506 102F          ;                                  SET INTERVAL COUNTER TO TH INTERVAL
 507 102F 9892 A          LD      AC2,@ATHI
 508 1030 B884 A          ST      AC2,@ATIN
 509 1031          ;
 510 1031          ;                                  SET CURRENT INTERVAL TIMER TO LENGTH OF
 511 1031          ;                                  CURRENT TH INTERVAL
 512 1031 C88F A          ADD     AC2,ATCTP
 513 1032 8600 A          LD      AC1,(AC2)
 514 1033 B485 A          ST      AC1,@ATINT
 515 1034          ;
 516 1034          ;                                  COPY APPROPRIATE COMMAND INDEX WORD INTO
 517 1034          ;                                  BUFFER(TCIWC)
 518 1034 9892 A          LD      AC2,@ATHI
 519 1035 C897 A          ADD     AC2,ATCIW
 520 1036 8600 A          LD      AC1,(AC2)
 521 1037 B482 A          ST      AC1,@ATCIWC
 522 1038          ;
 523 1038          ;                                  FORMAT OUTPUT WORD
 524 1038 2C3B A          JSR     @AXSDC
 525 1039          ;
 526 1039          ;
```

```
1039          ;                    ... INITIALIZATION PSEUDO HALT ...
1039 1DFF A EHLT:   BOC     CCPH,EHLT        ; PSEUDO HALT LOOP
103A          ;
103A          ;
103A 4C01 A         LI      AC0,C1
103B 8CE7 A         LD      AC3,ARTC
103C 0642 A         ROUT    FC42             ; START RTC
103D          ;
103D          ;                    ... INITIATE BACKGROUND PROGRAMS ...
103D 8C24 A         LD      AC3,AEBKD
103E 4300 A         PUSH    AC3
103F          ;
103F 0100 A         RTI     D0               ; RETURN AND ENABLE INTERRUPTS ...
1040          ;
1040          ;                    ... LOCAL DATA ...
1040          ;
1040 0FFF A H0FFF:  .WORD   X'0FFF
1041          ;
```

```
1041                    .LIST   LER
1041            ;
1041            ;                   ... GENERAL INTERRUPT SERVICING ROUTINE ...
1041            EGIS:
1041 181F A             BOC     CCSF,ESTK       ; TEST FOR STACK FULL LINE = 1
1042            ;
1042 B8AB A             ST      AC2,@AESV2      ; SAVE ACCUMULATORS
1043 88AB A             LD      AC2,AESV2
1044 A2FE A             ST      AC0,DM2(AC2)
1045 A6FF A             ST      AC1,DM1(AC2)
1046 AE01 A             ST      AC3,D1(AC2)
1047            ;
1047 4400 A             PULL    AC0             ; SAVE RALU FLAGS
1048 0080 A             PUSHF
1049 5400 A             XCHRS   AC0
104A B0AC A             ST      AC0,@AESVF
104B            ;
104B 4D04 A             LI      AC1,C4          ; SAVE CPU STACK
104C 88AC A             LD      AC2,AESVF       ; STACK FOLLOWS RALU FLAG WORD
104D 4700 A     EGIS1:  PULL    AC3             ; PULL STACK FROM TOP TO BOTTOM
104E AE01 A             ST      AC3,D1(AC2)
104F 4700 A             PULL    AC3
1050 AE02 A             ST      AC3,D2(AC2)
1051 4700 A             PULL    AC3
1052 AE03 A             ST      AC3,D3(AC2)
1053 4700 A             PULL    AC3
1054 AE04 A             ST      AC3,D4(AC2)
1055 4A04 A             AISZ    AC2,D4          ; INCREMENT SAVE AREA ADDRESS BY 4
1056 49FF A             AISZ    AC1,CM1         ; DECREMENT PASS COUNTER, SKIP IF DONE
1057 21F5 A             JMP     EGIS1
1058            ;
1058            ;
1058 4C01 A             LI      AC0,C1          ; SAVE SELECT FLAG STATE
1059 58EF A             ROR     AC0,D17
105A 1303 A             BOC     CCB0,EGIS2      ; BRANCH IF SELECT FLAG SET
105B 4C00 A             LI      AC0,C0
105C B0AD A             ST      AC0,@AESVS      ; SELECT FLAG = 0
105D 212D A             JMP     EGIS3
105E 4C01 A     EGIS2:  LI      AC0,C1
105F B0AD A             ST      AC0,@AESVS      ; SELECT FLAG = 1
1060 212A A             JMP     EGIS3
1061            ;
1061            ;
1061            ;
1061            ;                   ... CLEAR STACK FULL CONDITION ...
1061            ESTK:
1061 5400 A             XCHRS   AC0
1062 B0B3 A             ST      AC0,@AISTK1     ; SAVE STACK 1
1063 4400 A             PULL    AC0             ; RESTORE AC0
1064 5400 A             XCHRS   AC0
1065 B0B4 A             ST      AC0,@AISTK2     ; SAVE STACK 2
1066 4400 A             PULL    AC0             ; RESTORE AC0
```

```
 599 1067 5400 A          XCHRS   AC0
 600 1068 B0B5 A          ST      AC0,@AISTK3     ; SAVE STACK 3
 601 1069 4400 A          PULL    AC0             ; RESTORE AC0
 602 106A 5400 A          XCHRS   AC0
 603 106B B0B6 A          ST      AC0,@AISTK4     ; SAVE STACK 4
 604 106C 4400 A          PULL    AC0             ; RESTORE AC0
 605 106D                 ;
 606 106D B8B2 A          ST      AC2,@AISV2      ; SAVE ACCUMULATORS
 607 106E 88B2 A          LD      AC2,AISV2
 608 106F A2FE A          ST      AC0,DM2(AC2)
 609 1070 A6FF A          ST      AC1,DM1(AC2)
 610 1071 AE01 A          ST      AC3,D1(AC2)
 611 1072                 ;
 612 1072 8CE7 A          LD      AC3,ARTC
 613 1073 4C00 A          LI      AC0,C0
 614 1074 0643 A          ROUT    FC43            ; STOP RTC
 615 1075 0980 A          PFLG    INEN            ; DISABLE INTERRUPTS
 616 1076                 ;
 617 1076 88B6 A          LD      AC2,AISTK4      ; SAVE STACK 5 - 16
 618 1077 4D03 A          LI      AC1,C3
 619 1078 4700 A ESTK1:   PULL    AC3
 620 1079 AE01 A          ST      AC3,D1(AC2)
 621 107A 4700 A          PULL    AC3
 622 107B AE02 A          ST      AC3,D2(AC2)
 623 107C 4700 A          PULL    AC3
 624 107D AE03 A          ST      AC3,D3(AC2)
 625 107E 4700 A          PULL    AC3
 626 107F AE04 A          ST      AC3,D4(AC2)
 627 1080 4A04 A          AISZ    AC2,C4
 628 1081 49FF A          AISZ    AC1,CM1
 629 1082 21F5 A          JMP     ESTK1
 630 1083                 ;
 631 1083 89B2 A          LD      AC2,AISV2       ; RESTORE ACCUMULATORS
 632 1084 82FE A          LD      AC0,DM2(AC2)
 633 1085 86FF A          LD      AC1,DM1(AC2)
 634 1086 8E01 A          LD      AC3,D1(AC2)
 635 1087 98B2 A          LD      AC2,@AISV2
 636 1088                 ;
 637 1088 2C2F A          JSR     @AEADC          ; AUTODISCONNECT ROUTINE, NO RETURN
 638 1089                 ;
 639 1089 2100 A          JMP     .+1             ; THIS INST SHOULD NEVER BE REACHED
 640 108A 21FE A          JMP     .-1
 641 108B                 ;
 642 108B                 ;                  ... DETERMINE SOURCE OF INTERRUPT ...
 643 108B         EGIS3:
 644 108B                 ;
 645 108B                 ;                  ... RTC IS THE ONLY INTERRUPT PRESENTLY ASSIGNED ...
 646 108B                 ;
 647 108B                 ;                  ... REAL TIME CLOCK INTERRUPT SERVICING ROUTINE ...
 648 108B 889A A ERTC:    LD      AC2,AEBUF       ; CHECK FOR COMPLETION OF PREVIOUS
 649 108C 8200 A          LD      AC0,D0(AC2)     ;    RTC COMPUTE SEQUENCE
 650 108D 110A A          BOC     CCEZ,ERTC1      ; BRANCH IF NO ERROR
```

```
108E          ;
108E 889F A          LD      AC2,AEERR
108F A202 A          ST      AC0,D2(AC2)      ; STORE RTC COMPUTE FLAG, EERRO
1090 8201 A          LD      AC0,D1(AC2)
1091 4801 A          AISZ    AC0,C1           ; INCREMENT ERROR COUNTER
1092 2100 A          JMP     .+1
1093 A201 A          ST      AC0,D1(AC2)
1094 8200 A          LD      AC0,D0(AC2)
1095 0720 A          SETBIT  D0               ; SET ERROR FLAG BIT 0
1096 A200 A          ST      AC0,D0(AC2)
1097 2425 A          JMP     @AECER           ; RTC ERROR RESPONSE ROUTINE
1098          ;
1098 4C01 A ERTC1:   LI      AC0,C1           ; SET RTC COMPUTE FLAG
1099 A200 A          ST      AC0,D0(AC2)
109A          ;                  ... INITIALIZE STACK FOR RTC SEQUENCE ...
109A          ;
109A 4FFF A          LI      AC3,CM1
109B 4300 A          PUSH    AC3
109C 4300 A          PUSH    AC3              ; PUSH TWO PROTECTION WORDS OF ALL ONES
109D          ;
109D 2C26 A          JSR     @AESCH           ; CALL SCHEDULING ROUTINE
109E          ;
109E 4700 A          PULL    AC3              ; PULL TWO PROTECTION WORDS FROM STACK
109F 4700 A          PULL    AC3
10A0          ;
10A0          ;                  ... ENABLE OTHER INTERRUPTS ...
10A0          ;
10A0          ;                  ... NO OTHER INTERRUPTS PRESENTLY ASSIGNED ...
10A0 889A A          LD      AC2,AEBUF        ; RESET RTC COMPUTE FLAG
10A1 4C00 A          LI      AC0,C0
10A2 A200 A          ST      AC0,D0(AC2)
10A3          ;
10A3          ;                  ... RESTORE COMPUTATIONAL ENVIRONMENT ...
10A3 90AD A          LD      AC0,@AESVS       ; RESTORE SELECT FLAG
10A4 1102 A          BOC     CCEZ,EGIS4
10A5 0A00 A          SFLG    SELF
10A6 2101 A          JMP     .+2
10A7 0A80 A EGIS4:   PFLG    SELF
10A8          ;
10A8          ;
10A8 4D04 A          LI      AC1,C4           ; RESTORE CPU STACK
10A9 88AD A          LD      AC2,AESVS        ; STACK PRECEDES SELECT FLAG WORD
10AA 4AFC A EGIS5:   AISZ    AC2,DM4          ; DECREMENT SAVE AREA ADDRESS BY 4
10AB 8E03 A          LD      AC3,D3(AC2)      ; PUSH STACK FROM BOTTOM TO TOP
10AC 4300 A          PUSH    AC3
10AD 8E02 A          LD      AC3,D2(AC2)
10AE 4300 A          PUSH    AC3
10AF 8E01 A          LD      AC3,D1(AC2)
10B0 4300 A          PUSH    AC3
10B1 8E00 A          LD      AC3,D0(AC2)
10B2 4300 A          PUSH    AC3
10B3 49FF A          AISZ    AC1,CM1          ; DECREMENT PASS COUNTER, SKIP IF DONE
```

```
  703 10B4 21F5 A          JMP     EGIS5
  704 10B5                 ;
  705 10B5 90AC A          LD      AC0,@AESVF      ; RESTORE RALU FLAGS
  706 10B6 5400 A          XCHRS   AC0
  707 10B7 0280 A          PULLF
  708 10B8 4000 A          PUSH    AC0
  709 10B9                 ;-------------------------------------------------
  710 10B9                 ;                                RESTORE ACCUMULATORS
  711 10B9 88AB A          LD      AC2,AESV2
  712 10BA 82FE A          LD      AC0,DM2(AC2)
  713 10BB 86FF A          LD      AC1,DM1(AC2)
  714 10BC 8E01 A          LD      AC3,D1(AC2)
  715 10BD 98AB A          LD      AC2,@AESV2
  716 10BE                 ;
  717 10BE 0100 A          RTI                     ; RETURN AND ENABLE INTERRUPTS
  718 10BF                 ;-------------------------------------------------
  719 10BF                 ;                  ... RTC ERROR, PREVIOUS SEQUENCE INCOMPLETE ...
  720 10BF                 ECER:
  721 10BF 2C2F A          JSR     @AEADC          ; AUTODISCONNECT ROUTINE, NO RETURN
  722 10C0                 ;
  723 10C0 2100 A          JMP     .+1             ; THIS INST SHOULD NEVER BE REACHED
  724 10C1 21FE A          JMP     .-1
```

```
10C2                    .LIST   LER
10C2            ;
10C2            ;                   ... COMPUTER CONTROL UNIT INITIALIZATION ...
10C2            ECCU:
10C2            ;
10C2            ;                   ... TEST FOR CCU IN SYSTEM ...
10C2 1C01 A             BOC     CCCU,.+2        ; BRANCH IF CCU IS IN SYSTEM
10C3 2115 A             JMP     ECCUR           ; JUMP IF CCU NOT IN SYSTEM
10C4            ;
10C4 9115 A             LD      AC0,@ACCUI      ; CHECK FIRST INST IN CCU ROUTINE
10C5 F115 A             SKNE    AC0,ECCUI       ; SKIP IF CCU NOT IN SYSTEM
10C6 2101 A             JMP     .+2
10C7 2111 A             JMP     ECCUR           ; JUMP TO RETURN
10C8            ;
10C8            ;                   ... INITIALIZE CCU RAM ...
10C8 4C00 A             LI      AC0,C0
10C9 4D30 A             LI      AC1,C48         ; LENGTH OF CCU RAM = 48
10CA 8913 A             LD      AC2,ACWAP       ; INITIALIZE ADDRESS POINTER
10CB            ;
10CB A2F4 A ECCU1:      ST      AC0,DM12(AC2)   ; CLEAR RAM
10CC 4A01 A             AISZ    AC2,C1          ; INCREMENT ADDRESS POINTER
10CD 49FF A             AISZ    AC1,CM1         ; DECREMENT COUNTER, SKIP IF DONE
10CE 21FC A             JMP     ECCU1           ; CONTINUE LOOP
10CF            ;
10CF 890E A             LD      AC2,ACWAP       ; INITIALIZE ADDRESS POINTER
10D0 7AF9 A             ISZ     DM7(AC2)        ; SET STATE WORD = +1
10D1 7E0C A             DSZ     D12(AC2)        ; SET BREAKPOINT ADDRESS 0 = -1
10D2 7E0E A             DSZ     D14(AC2)        ; SET BREAKPOINT ADDRESS 1 = -1
10D3            ;
10D3 810B A             LD      AC0,AECCUR      ; RETURN ADDRESS FROM CCU ROUTINE
10D4 A203 A             ST      AC0,D3(AC2)     ; STORE IN TEMPORARY PC LOC IN CCU RAM
10D5            ;
10D5 8107 A             LD      AC0,ACRAM       ; BASE ADDRESS OF CCU RAM WORK AREA
10D6 A2FA A             ST      AC0,CM6(AC2)    ; INITIALIZE PUSH/PULL POINTER
10D7            ;
10D7 4C00 A             LI      AC0,C0          ; AC0 = 0, INITIAL DISPLAY
10D8 2503 A             JMP     @ACDISP         ; TO CCU ROUTINE, RETURN IS TO ECCUR
10D9            ;
10D9 0200 A ECCUR:      RTS     D0              ; RETURN FROM ECCU
10DA            ;
10DA            ;                   ... LOCAL DATA ...
10DA EF00 A ACCUI:      .WORD   X'EF00          ; LOC OF FIRST INST IN CCU ROUTINE
10DB 86F7 A ECCUI:      .WORD   X'86F7          ; FIRST INST IN CCU ROUTINE
10DC EF84 A ACDISP:     .WORD   X'EF84          ; CCU ROM + X'84
10DD ECD0 A ACRAM:      .WORD   X'ECD0          ; FIRST LOC IN CCU RAM WORK AREA
10DE ECDC A ACWAP:      .WORD   X'ECDC          ; CCU RAM WORK AREA + X'C
10DF 10D9 A AECCUR:     .WORD   ECCUR           ; RETURN ADDRESS FROM CCU INITIALIZATION
```

```
 776 10E0                    .LIST   LER
 777 10E0                    ;
 778 10E0                    ;               ... INITIALIZATION RAM ADDRESS TEST ...
 779 10E0                    EMAD:
 780 10E0                    ;
 781 10E0                    ;               ... TEST 4K STATIC RAM ...
 782 10E0                    ;                   (CAN ONLY TEST ADDRESS -NOT- USED BY DATA BASE)
 783 10E0 80D6 A             LD      AC0,ADEND       ; START ADDRESS (PAST DATA BASE)
 784 10E1 B0D4 A             ST      AC0,@ASSAD
 785 10E2 80F2 A             LD      AC0,H3FFF       ; END ADDRESS
 786 10E3 B0D5 A             ST      AC0,@ASEAD
 787 10E4                    ;
 788 10E4 2C5A A             JSR     @ASMAD
 789 10E5 2109 A             JMP     EMADE           ; ERROR RETURN, (AC2) = CONTENTS
 790 10E6                                            ;               (AC3) = ADDRESS
 791 10E6 2100 A             JMP     .+1             ; NO ERROR RETURN
 792 10E7                    ;
 793 10E7                    ;               ... TEST CCU RAM ON IMP/16C CARD ...
 794 10E7                    ;                   ( CAN ONLY TEST ADDRESSES -NOT- USED BY CCU)
 795 10E7 80F3 A             LD      AC0,HEC00       ; START ADDRESS
 796 10E8 B0D4 A             ST      AC0,@ASSAD
 797 10E9 80F4 A             LD      AC0,HECCF       ; END ADDRESS
 798 10EA B0D5 A             ST      AC0,@ASEAD
 799 10EB                    ;
 800 10EB 2C5A A             JSR     @ASMAD
 801 10EC 2102 A             JMP     EMADE           ; ERROR RETURN, (AC2) = CONTENTS
 802 10ED                                            ;               (AC3) = ADDRESS
 803 10ED 2100 A             JMP     .+1             ; NO ERROR RETURN
 804 10EE                    ;
 805 10EE 2103 A             JMP     EMADR
 806 10EF                    ;
 807 10EF 2C2F A EMADE:      JSR     @AEADC          ; AUTODISCONNECT ROUTINE, NO RETURN
 808 10F0                    ;
 809 10F0 2100 A             JMP     .+1             ; THIS INST SHOULD NEVER BE REACHED
 810 10F1 21FE A             JMP     .-1
 811 10F2                    ;
 812 10F2 0200 A EMADR:      RTS     DO              ; RETURN FROM EMAD
 813 10F3                    ;
```

```
10F3                    .LIST   LER
10F3            ;
10F3            ;                   ... RTC SCHEDULING ROUTINE ...
10F3            ESCH:
10F3 8CE7 A             LD      AC3,ARTC
10F4 4C00 A             LI      AC0,C0          ; CLEAR AC0
10F5 0641 A             ROUT    FC41            ; RESET RTC INTERRUPT PULSE
10F6            ;
10F6 0900 A             SFLG    INEN              ; ENABLE INTERRUPTS
10F7            ;
10F7 1F01 A             BOC     CCCF,.+2        ; BRANCH IF COTF JUMP CONDITION SET
10F8 2101 A             JMP     .+2
10F9 2C3D A             JSR     @ACOTF          ; CALL CATCH ON THE FLY ROUTINE
10FA            ;
10FA 2C39 A             JSR     @AXRTC
10FB 2C3C A             JSR     @ABRTC
10FC 2C27 A             JSR     @AEDIS
10FD 2C28 A             JSR     @AECOM
10FE 2C29 A             JSR     @AESYN
10FF 2C2A A             JSR     @AEMIC
1100 2C2B A             JSR     @AETIM
1101 2C2E A             JSR     @AEDET
1102 2C30 A             JSR     @APMON
1103 2C35 A             JSR     @ATPEX
1104 2C3B A             JSR     @AXSDC
1105 2C2D A             JSR     @AESDW
1106 2C40 A             JSR     @AEPPM
1107            ;
1107 2105 A             JMP     ERTS
1108            ;
1108 8905 A             LD      AC2,EDLAY
1109 5C76 A             SHL     AC0,D118
110A 5C74 A             SHL     AC0,D116
110B 4A01 A             AISZ    AC2,C1
110C 21FC A             JMP     .-3
110D            ;
110D 0200 A     ERTS:   RTS     D0
110E            ;                                   VARIABLE DELAY
110E FFCE A     EDLAY:  .WORD   -50
110F            ;
110F            ;
```

```
110F                    .LIST   LER
110F            ;
110F            ;                   ... AUTODISCONNECT ROUTINE ...
110F            EADC:
110F B8B7 A             ST      AC2,@AEDSV2     ; SAVE ACCUMULATORS
1110 88B7 A             LD      AC2,AEDSV2
1111 A2FE A             ST      AC0,DM2(AC2)
1112 A6FF A             ST      AC1,DM1(AC2)
1113 AE01 A             ST      AC3,D1(AC2)
1114            ;
1114 8CE7 A             LD      AC3,ARTC
1115 4C00 A             LI      AC0,C0
1116 0643 A             ROUT    FC43            ; STOP RTC
1117 0641 A             ROUT    FC41            ; ASSURE RTC INTERRUPT PULSE RESET
1118 0980 A             PFLG    INEN            ; DISABLE INTERRUPTS
1119            ;
1119 4400 A             PULL    AC0             ; SAVE RALU FLAGS
111A 0080 A             PUSHF
111B 5400 A             XCHRS   AC0
111C B0B8 A             ST      AC0,@AEDSVF
111D            ;
111D 4D04 A             LI      AC1,C4          ; SAVE CPU STACK
111E 88B8 A             LD      AC2,AEDSVF      ; STACK FOLLOWS RALU FLAG WORD
111F 4700 A     EADC1:  PULL    AC3             ; PULL STACK FROM TOP TO BOTTOM
1120 AE01 A             ST      AC3,D1(AC2)
1121 4700 A             PULL    AC3
1122 AF02 A             ST      AC3,D2(AC2)
1123 4700 A             PULL    AC3
1124 AE03 A             ST      AC3,D3(AC2)
1125 4700 A             PULL    AC3
1126 AE04 A             ST      AC3,D4(AC2)
1127 4A04 A             AISZ    AC2,D4          ; INCREMENT SAVE AREA ADDRESS BY 4
1128 49FF A             AISZ    AC1,CM1         ; DECREMENT PASS COUNTER, SKIP IF DONE
1129 21F5 A             JMP     EADC1
112A            ;
112A            ;
112A 4C01 A             LI      AC0,C1          ; SAVE SELECT FLAG STATE
112B 58EF A             ROR     AC0,D17
112C 1303 A             BOC     CCB0,EADC2      ; BRANCH IF SELECT FLAG SET
112D 4C00 A             LI      AC0,C0
112E B0B9 A             ST      AC0,@AEDSVS     ; SELECT FLAG = 0
112F 2102 A             JMP     EADC3
1130 4C01 A     EADC2:  LI      AC0,C1
1131 B0B9 A             ST      AC0,@AEDSVS     ; SELECT FLAG = 1
1132            ;
1132            EADC3:
1132            ;
1132 2C2D A             JSR     @AESDW          ; CONSTRUCT STATUS DISPLAY WORD
1133            ;
1133 906B A             LD      AC0,@AXBUF      ; FETCH SDW
1134 0751 A             SKBIT   D1              ; CHECK EXTERNAL DISCONNECT BIT
1135 2101 A             JMP     .+2             ; JUMP IF NOT EXTERNAL
```

```
 911 1136 2104 A          JMP     EADC4           ; JUMP IF EXTERNAL
 912 1137 0720 A          SETBIT  D0              ; SET DISCONNECT BIT
 913 1138 B06B A          ST      AC0,@AXBUF
 914 1139 8CE3 A          LD      AC3,ATCP        ; OUTPUT CONTROL PULSE FOR
 915 113A 0643 A          ROUT    FC43            ;    INTERNAL DISCONNECT TO TCP
 916 113B                 ;
 917 113B 8CE4 A EADC4:   LD      AC3,ASDU        ; OUTPUT SDW TO SDU
 918 113C 906B A          LD      AC0,@AXBUF      ; FETCH SDW
 919 113D 0601 A          ROUT    FC1
 920 113E                 ;-----------------------------------------------
 921 113E                 ;
 922 113E 3081 A          NOP                     ; TERMINAL WAIT LOOP, NO RETURN
 923 113F 3081 A          NOP
 924 1140 21FD A          JMP     .-2
 925 1141 0000 A          HALT                    ; THIS HALT SHOULD NEVER BE REACHED
 926 1142 0000 A          HALT
```

```
1143                .LIST   LFR
1143          ;
1143          ;                    ... TIME OUT FOR DEBUG ROUTINE ...
1143          ;*****************************************************************************
1143          ;
1143          COTF:
1143 B8AF A          ST      AC2,@ACSV2                  ; SAVE ACCUMULATORS
1144 88AF A          LD      AC2,ACSV2
1145 A2FE A          ST      AC0,DM2(AC2)
1146 A6FF A          ST      AC1,DM1(AC2)
1147 AE01 A          ST      AC3,D1(AC2)
1148          ;
1148 4400 A          PULL    AC0                 ; SAVE RALU FLAGS
1149 0080 A          PUSHF
114A 5400 A          XCHRS   AC0
114B BCB0 A          ST      AC0,@ACSVF
114C          ;
114C 4D04 A          LI      AC1,C4              ; SAVE CPU STACK
114D 88B0 A          LD      AC2,ACSVF           ; STACK FOLLOWS RALU FLAG WORD
114E 4700 A COTF1:   PULL    AC3                 ; PULL STACK FROM TOP TO BOTTOM
114F AE01 A          ST      AC3,D1(AC2)
1150 4700 A          PULL    AC3
1151 AE02 A          ST      AC3,D2(AC2)
1152 4700 A          PULL    AC3
1153 AE03 A          ST      AC3,D3(AC2)
1154 4700 A          PULL    AC3
1155 AE04 A          ST      AC3,D4(AC2)
1156 4A04 A          AISZ    AC2,D4              ; INCREMENT SAVE AREA ADDRESS BY 4
1157 49FF A          AISZ    AC1,CM1             ; DECREMENT PASS COUNTER, SKIP IF DONE
1158 21F5 A          JMP     COTF1
1159          ;
1159          ;
1159 4C01 A          LI      AC0,C1              ; SAVE SELECT FLAG STATE
115A 58EF A          ROR     AC0,D17
115B 1303 A          BOC     CCB0,COTF2          ; BRANCH IF SELECT FLAG SET
115C 4C00 A          LI      AC0,C0
115D B0B1 A          ST      AC0,@ACSVS          ; SELECT FLAG = 0
115E 2102 A          JMP     COTF3
115F 4C01 A COTF2:   LI      AC0,C1
1160 B0B1 A          ST      AC0,@ACSVS          ; SELECT FLAG = 1
1161          ;
1161          ;                                   STOP THE CLOCK
1161          COTF3:
1161 8CE7 A          LD      AC3,ARTC
1162 4C00 A          LI      AC0,C0
1163 0643 A          ROUT    FC43                        ; STOP RTC
1164 0641 A          ROUT    FC41                ; RESET RTC INTERRUPT PULSE
1165          ;
1165          ;-----------------------------------------------------------------------------
1165 3081 A          NOP                                 ; INSERT DEBUG HALT OR SNAP HERE
1166 3081 A          NOP
1167 2CA9 A          JSR     @AERAM              ; FIRST LOCATION IN FREE RAM
```

```
 981 1168 3081 A          NOP
 982 1169 3081 A          NOP
 983 116A 3081 A          NOP
 984 116B                 ;-----------------------------------------------------------------
 985 116B                 ;
 986 116B                 ;                                START THE CLOCK
 987 116B 8CE7 A          LD       AC3,ARTC
 988 116C 4C00 A          LI       AC0,C0
 989 116D 0642 A          ROUT     FC42                    ; START RTC
 990 116E                 ;-----------------------------------------------------------------
 991 116E                 ;                  ... RESTORE COMPUTATIONAL ENVIRONMENT ...
 992 116E                 ;
 993 116E 90B1 A          LD       AC0,@ACSVS      ; RESTORE SELECT FLAG
 994 116F 1102 A          BOC      CCEZ,COTF4
 995 1170 0A00 A          SFLG     SELF
 996 1171 2101 A          JMP      .+2
 997 1172 0A80 A COTF4:   PFLG     SELF
 998 1173                 ;
 999 1173                 ;-----------------------------------------------------------------
1000 1173 4D04 A          LI       AC1,C4          ; RESTORE CPU STACK
1001 1174 88B1 A          LD       AC2,ACSVS       ; STACK PRECEDES SELECT FLAG WORD
1002 1175 4AFC A COTF5:   AISZ     AC2,DM4         ; DECREMENT SAVE AREA ADDRESS BY 4
1003 1176 8E03 A          LD       AC3,D3(AC2)     ; PUSH STACK FROM BOTTOM TO TOP
1004 1177 4300 A          PUSH     AC3
1005 1178 8E02 A          LD       AC3,D2(AC2)
1006 1179 4300 A          PUSH     AC3
1007 117A 8E01 A          LD       AC3,D1(AC2)
1008 117B 4300 A          PUSH     AC3
1009 117C 8E00 A          LD       AC3,D0(AC2)
1010 117D 4300 A          PUSH     AC3
1011 117E 49FF A          AISZ     AC1,CM1         ; DECREMENT PASS COUNTER, SKIP IF DONE
1012 117F 21F5 A          JMP      COTF5
1013 1180                 ;
1014 1180 90B0 A          LD       AC0,@ACSVF      ; RESTORE RALU FLAGS
1015 1181 5400 A          XCHRS    AC0
1016 1182 0280 A          PULLF
1017 1183 4000 A          PUSH     AC0
1018 1184                 ;
1019 1184                 ;                                RESTORE ACCUMULATORS
1020 1184 88AF A          LD       AC2,ACSV2
1021 1185 82FE A          LD       AC0,DM2(AC2)
1022 1186 86FF A          LD       AC1,DM1(AC2)
1023 1187 8E01 A          LD       AC3,D1(AC2)
1024 1188 98AF A          LD       AC2,@ACSV2
1025 1189                 ;
1026 1189 0200 A          RTS      D0              ; RETURN FROM COTF
```

```
1027 118A                    .PAGE
1028 118A                    .ASECT
1029 118A 1200 A             .=X'1200
1030 1200                    ;
```

```
1200                    .LIST   LES
1200            ;
1200            ;                       ... MONITOR FOR DISCONNECT ...
1200            EDIS:
1200            ;
1200            ;                       ... TEST PROCESSOR STATUS FLAGS ...
1200 0744 A             SKSTF   D4                  ; SKIP IF RAM ADDRESS TEST ERROR
1201 2101 A             JMP     .+2
1202 210C A             JMP     EDISH
1203            ;
1203            ;                       ... RESERVE TESTS FOR ADDITIONAL STATUS FLAGS ...
1203 0745 A             SKSTF   D5
1204 2101 A             JMP     .+2
1205 2109 A             JMP     EDISH
1206            ;
1206 0746 A             SKSTF   D6
1207 2101 A             JMP     .+2
1208 2106 A             JMP     EDISH
1209            ;
1209 0747 A             SKSTF   D7
120A 2101 A             JMP     .+2
120B 2103 A             JMP     EDISH
120C            ;
120C 9069 A             LD      AC0,@ABDIN          ; DISCRETE INPUT WORD
120D 075F A             SKBIT   D15                 ; SKIP IF DISCONNECT BIT IS SET
120E 0200 A             RTS     D0
120F            ;
120F 2C2F A     EDISH:  JSR     @AEADC              ; AUTODISCONNECT ROUTINE, NO RETURN
1210            ;
1210 2100 A             JMP     .+1                 ; THIS INST SHOULD NEVER BE REACHED
1211 21FE A             JMP     .-1
1212            ;
```

```
1212                .LIST   LES
1212        ;
1212        ;                   ... MONITOR COMMAND FEEDBACK DATA FROM LDU ...
1212        ECOM:
1212 4C00 A         LI      AC0,C0
1213 B0A0 A         ST      AC0,@AECMF      ; CLEAR CURRENT RTC INTERVAL ERROR FLAG
1214        ;
1214        ;                   ... COMMAND FEEDBACK TEST FOR MAIN STREET ...
1214 886B A         LD      AC2,AXBUF
1215 8201 A         LD      AC0,D1(AC2)     ; XOCW1 OUTPUT COMMAND
1216 60F2 A         AND     AC0,H3FFF       ; MASK OFF DON'T CARE BITS 15,14
1217 8868 A         LD      AC2,ABBUF
1218 8601 A         LD      AC1,D1(AC2)     ; BCR1 FEEDBACK COMMAND
1219 60F2 A         AND     AC0,H3FFF       ; MASK OFF DON'T CARE BITS 15,14
121A 3482 A         RXOR    AC1,AC0         ; COMPARE, AC1 UNALTERED
121B 110B A         BOC     CCEZ,ECOM1      ; BRANCH IF IDENTICAL (AC0=0)
121C        ;
121C        ;                   ... MAIN STREET COMMAND FEEDBACK ERROR ...
121C 889F A         LD      AC2,AEERR
121D A604 A         ST      AC1,D4(AC2)     ; STORE BCR1 IN ERROR BUFFER, EERR1
121E 8203 A         LD      AC0,D3(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
121F 4801 A         AISZ    AC0,C1
1220 2100 A         JMP     .+1
1221 A203 A         ST      AC0,D3(AC2)
1222 8200 A         LD      AC0,D0(AC2)
1223 0721 A         SETBIT  D1              ; SET ERROR FLAG BIT 1
1224 A200 A         ST      AC0,D0(AC2)
1225 4C01 A         L1      AC0,C1
1226 B0A0 A         ST      AC0,@AECMF      ; SET CURRENT RTC INTERVAL ERROR FLAG
1227        ;
1227        ;                   ... COMMAND FEEDBACK TEST FOR CROSS STREET ...
1227        ECOM1:
1227 886B A         LD      AC2,AXBUF
1228 8202 A         LD      AC0,D2(AC2)     ; XOCW2 OUTPUT COMMAND
1229 60F2 A         AND     AC0,H3FFF       ; MASK OFF DON'T CARE BITS 15,14
122A 8868 A         LD      AC2,ABBUF
122B 8602 A         LD      AC1,D2(AC2)     ; BCR2 FEEDBACK COMMAND
122C 60F2 A         AND     AC0,H3FFF       ; MASK OFF DON'T CARE BITS 15,14
122D 3482 A         RXOR    AC1,AC0         ; COMPARE, AC1 UNALTERED
122E 110C A         BOC     CCEZ,ECOM2      ; BRANCH IF IDENTICAL (AC0=0)
122F        ;
122F        ;                   ... CROSS STREET COMMAND FEEDBACK ERROR ...
122F 889F A         LD      AC2,AEERR
1230 A606 A         ST      AC1,D6(AC2)     ; STORE BCR2 IN ERROR BUFFER, EERR2
1231 8205 A         LD      AC0,D5(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
1232 4801 A         AISZ    AC0,C1
1233 2100 A         JMP     .+1
1234 A205 A         ST      AC0,D5(AC2)
1235 8200 A         LD      AC0,D0(AC2)
1236 0722 A         SETBIT  D2              ; SET ERROR FLAG BIT 2
1237 A200 A         ST      AC0,D0(AC2)
1238 4C02 A         L1      AC0,C2
```

EXECUTIVE CPC - COMMAND MONITORING

```
1119 1239 B0A0 A          ST      AC0,@AECMF      ;SET CURRENT RTC INTERVAL ERROR FLAG
1120 123A 2103 A          JMP     ECOMR
1121 123B                 ;
1122 123B 90A0 A ECOM2:   LD      AC0,@AECMF      ; TEST CURRENT RTC INTERVAL ERROR FLAG
1123 123C 1501 A          BOC     CCNZ,ECOMR      ; BRANCH IF ERROR
1124 123D                 ;
1125 123D 2C3A A          JSR     @AXWDT          ; RESET WATCHDOG TIMER IF NO ERROR
1126 123E                 ;
1127 123E 0200 A ECOMR:   RTS     D0              ; RETURN FROM ECOM
1128 123F                 ;
```

```
123F                    .LIST   LES
123F            ;
123F            ;                   ... LOOP MASTER SYNCHRONIZATION ROUTINE ...
123F            ESYN:
123F 90A2 A             LD      AC0,@AER123     ; FETCH RESET SELECT DATUM
1240 1125 A             BOC     CCEZ,ESYN4A     ; BRANCH IF NO RESET IS HIGH (PULSE)
1241 4D02 A             LI      AC1,C2
1242 3482 A             RXOR    AC1,AC0
1243 1113 A             BOC     CCEZ,ESYN1      ; BRANCH IF ONLY RESET 1 IS HIGH
1244 90A2 A             LD      AC0,@AER123     ; RESTORE RESET SELECT DATUM
1245 4D04 A             LI      AC1,C4
1246 3482 A             RXOR    AC1,AC0
1247 1114 A             BOC     CCEZ,ESYN2      ; BRANCH IF ONLY RESET 2 IS HIGH
1248 90A2 A             LD      AC0,@AER123     ; RESTORE RESET SELECT DATUM
1249 4D08 A             LI      AC1,C8
124A 3482 A             RXOR    AC1,AC0
124B 1115 A             BOC     CCEZ,ESYN3      ; BRANCH IF ONLY RESET 3 IS HIGH
124C 889F A             LD      AC2,AEERR       ; ERROR, MORE THAN ONE RESET IS HIGH
124D 90A2 A             LD      AC0,@AER123     ; RESTORE RESET SELECT DATUM
124E A208 A             ST      AC0,D8(AC2)     ; STORE IN ERROR BUFFER, EERR3
124F 8207 A             LD      AC0,D7(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
1250 4801 A             AISZ    AC0,C1
1251 2100 A             JMP     .+1
1252 A207 A             ST      AC0,D7(AC2)
1253 8200 A             LD      AC0,D0(AC2)
1254 0723 A             SETBIT  D3              ; SET ERROR FLAG BIT 3
1255 A200 A             ST      AC0,D0(AC2)
1256 0200 A             RTS     D0
1257            ;
1257            ESYN1:                          ; RESET 1
1257 2921 A             JSR     ESYA            ; COMPUTE ADDRESS OF DATA BUFFER (AC2)
1258 8201 A             LD      AC0,D1(AC2)     ; RESET 1 POSITION (RTC UNITS)
1259 D205 A             SUB     AC0,D5(AC2)     ; COMPARE WITH SYNCH DIAL TIMER
125A 111D A             BOC     CCEZ,ESYN6      ; BRANCH IF DIAL IS AT RESET POINT
125B 210B A             JMP     ESYN4
125C            ;
125C            ESYN2:                          ; RESET 2
125C 291C A             JSR     ESYA            ; COMPUTE ADDRESS OF DATA BUFFER (AC2)
125D 8202 A             LD      AC0,D2(AC2)     ; RESET 2 POSITION (RTC UNITS)
125E D205 A             SUB     AC0,D5(AC2)     ; COMPARE WITH SYNCH DIAL TIMER
125F 1118 A             BOC     CCEZ,ESYN6      ; BRANCH IF DIAL IS AT RESET POINT
1260 2106 A             JMP     ESYN4
1261            ;
1261            ESYN3:                          ; RESET 3
1261 2917 A             JSR     ESYA            ; COMPUTE ADDRESS OF DATA BUFFER (AC2)
1262 8203 A             LD      AC0,D3(AC2)     ; RESET 3 POSITION (RTC UNITS)
1263 D205 A             SUB     AC0,D5(AC2)     ; COMPARE WITH SYNCH DIAL TIMER
1264 1113 A             BOC     CCEZ,ESYN6      ; BRANCH IF DIAL IS AT RESET POINT
1265 2101 A             JMP     ESYN4
1266            ;
1266 2912 A     ESYN4A: JSR     ESYA            ; COMPUTE ADDRESS OF DATA BUFFER (AC2)
1267            ESYN4:                          ; INCREMENT SYNCH DIAL TIMER
```

```
1183 1267 7A05 A          ISZ     D5(AC2)
1184 1268 2100 A          JMP     .+1
1185 1269 8200 A          LD      AC0,D0(AC2)     ; FETCH CYCLE LENGTH
1186 126A E205 A          SKG     AC0,D5(AC2)     ; SKIP IF BEFORE END OF CYCLE
1187 126B 2101 A          JMP     .+2
1188 126C 2105 A          JMP     ESYN5
1189 126D 4C00 A          LI      AC0,C0
1190 126E A205 A          ST      AC0,D5(AC2)     ; ZERO SYNCH DIAL TIMER
1191 126F 4C01 A          LI      AC0,C1
1192 1270 B09D A          ST      AC0,@AEPST      ; SET START PULSE
1193 1271 2106 A          JMP     ESYN6
1194 1272         ;
1195 1272         ESYN5:
1196 1272 8204 A          LD      AC0,D4(AC2)     ; FETCH END OF START PULSE
1197 1273 E205 A          SKG     AC0,D5(AC2)     ; SKIP IF BEFORE END OF START PULSE
1198 1274 2101 A          JMP     .+2
1199 1275 2102 A          JMP     ESYN6
1200 1276 4C00 A          LI      AC0,C0
1201 1277 B09D A          ST      AC0,@AEPST      ; RESET START PULSE
1202 1278         ;
1203 1278         ESYN6:
1204 1278 0200 A          RTS     D0              ; RETURN FROM ESYN
1205 1279         ;
1206 1279         ESYA:                           ; COMPUTE BASE ADDRESS OF SYNCH DATA
1207 1279                                         ;    FOR OPERATING DIAL, (AC2)
1208 1279 4C06 A          LI      AC0,C6          ; BUFFER LENGTH = 6
1209 127A 88A1 A          LD      AC2,AESYD       ; BASE ADDRESS FOR DIAL 1
1210 127B 9C83 A          LD      AC3,@ATCDS      ; CURRENT DIAL SELECTION
1211 127C 4BFF A ESYA1:   AISZ    AC3,CM1         ; SKIP IF BASE ADDRESS COMPUTED
1212 127D 2101 A          JMP     .+2
1213 127E 2102 A          JMP     ESYA2
1214 127F 3200 A          RADD    AC0,AC2         ; INCREMENT BY BUFFER LENGTH
1215 1280 21FB A          JMP     ESYA1
1216 1281         ESYA2:
1217 1281 0200 A          RTS     D0              ; RETURN FROM ESYA
1218 1282         ;
```

```
1282                    .LIST   LES
1282            ;
1282            ;                   ... MONITOR INTERCONNECT DATA (R1,R2,R3,D2,D3) ...
1282            EMIC:
1282            ;                   ... NOISE OR TRANSITION FILTER ON D2,D3 ...
1282            ;
1282 9069 A             LD      AC0,@ABDIN      ; ACCESS BDIN
1283 611E A             AND     AC0,H0030       ; EXTRACT D2,D3 TO GET NEW EDNO
1284 8CA5 A             LD      AC3,AEDNO       ; PAST VALUE BUFFER BASE ADDRESS
1285 8700 A             LD      AC1,D0(AC3)     ; UPDATE PAST VALUES
1286 8B01 A             LD      AC2,D1(AC3)
1287 A300 A             ST      AC0,D0(AC3)     ; STORE IN BUFFER, EDNO, 0TH PAST VALUE
1288 A701 A             ST      AC1,D1(AC3)     ;                  EDN1, 1ST PAST VALUE
1289 AB02 A             ST      AC2,D2(AC3)     ;                  EDN2, 2ND PAST VALUE
128A 3482 A             RXOR    AC1,AC0
128B 1505 A             BOC     CCNZ,EMIC1      ; BRANCH IF EDNO.NE.EDN1
128C 8300 A             LD      AC0,D0(AC3)     ; RESTORE EDNO
128D 3882 A             RXOR    AC2,AC0
128E 1502 A             BOC     CCNZ,EMIC1      ; BRANCH IF EDNO.NE.EDN2
128F 8300 A             LD      AC0,D0(AC3)     ; RESTORE EDNO
1290 B0A4 A             ST      AC0,@AED23      ; THREE PAST VALUES ARE IDENTICAL
1291                                            ;    UPDATE INTERNAL DIAL SELECT DATUM
1291            EMIC1:
1291            ;                   ... NOISE OR TRANSITION FILTER ON R1,R2,R3 ...
1291            ;
1291 9069 A             LD      AC0,@ABDIN      ; ACCESS BDIN
1292 610E A             AND     AC0,H000E       ; EXTRACT R1,R2,R3 TO GET NEW ERNO
1293 8CA3 A             LD      AC3,AERNO       ; PAST VALUE BUFFER BASE ADDRESS
1294 8700 A             LD      AC1,D0(AC3)     ; UPDATE PAST VALUES
1295 8B01 A             LD      AC2,D1(AC3)
1296 A300 A             ST      AC0,D0(AC3)     ; STORE IN BUFFER, ERNO, 0TH PAST VALUE
1297 A701 A             ST      AC1,D1(AC3)     ;                  ERN1, 1ST PAST VALUE
1298 AB02 A             ST      AC2,D2(AC3)     ;                  ERN2, 2ND PAST VALUE
1299 3482 A             RXOR    AC1,AC0
129A 1505 A             BOC     CCNZ,EMIC2      ; BRANCH IF ERNO.NE.ERN1
129B 8300 A             LD      AC0,D0(AC3)     ; RESTORE ERNO
129C 3882 A             RXOR    AC2,AC0
129D 1502 A             BOC     CCNZ,EMIC2      ; BRANCH IF ERNO.NE.ERN2
129E 8300 A             LD      AC0,D0(AC3)     ; RESTORE ERNO
129F B0A2 A             ST      AC0,@AER123     ; THREE PAST VALUES ARE IDENTICAL
12A0                                            ;    UPDATE INTERNAL RESET SELECT DATUM
12A0            EMIC2:
12A0 0200 A             RTS     D0              ; RETURN FROM EMIC
12A1            ;
12A1            ;                   ... LOCAL DATA ...
12A1 000E A H000E:      .WORD   X'000E          ; BITS 1,2,3 SET
12A2 0030 A H0030:      .WORD   X'0030          ; BITS 4,5 SET
12A3            ;
```

```
1271 12A3                .LIST  LES
1272 12A3              ;
1273 12A3              ;                    ... EXECUTIVE TIMING ROUTINE ...
1274 12A3              ETIM:
1275 12A3 2100 A               JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
1276 12A4              ;
1277 12A4 9069 A               LD      AC0,@ABDIN              ; FETCH BDIN
1278 12A5 075E A               SKBIT   D14                     ; SKIP IF WAIT CONDITION
1279 12A6 2101 A               JMP     .+2
1280 12A7 2105 A               JMP     ETIM1
1281 12A8                                                      ; BYPASS THESE FNS IN THE WAIT STATE
1282 12A8 909B A               LD      AC0,@AETCY              ; TIMING PLAN CYCLE TIMER
1283 12A9 4801 A               AISZ    AC0,C1                  ; INCREMENT TIMERS
1284 12AA 2100 A               JMP     .+1
1285 12AB B09B A               ST      AC0,@AETCY              ; STORE CYCLE TIMER
1286 12AC B09C A               ST      AC0,@AETST              ; STORE 'WAIT FOR SYNCH START' TIMER
1287 12AD              ;
1288 12AD 90A6 A ETIM1:        LD      AC0,@AEDMIT             ; INCREMENT DETECTOR MONITORING
1289 12AE 4801 A               AISZ    AC0,C1                  ;   INTERVAL TIMER
1290 12AF 2100 A               JMP     .+1
1291 12B0 B0A6 A               ST      AC0,@AEDMIT
1292 12B1              ;
1293 12B1 0200 A ETIMR:        RTS     D0
1294 12B2              ;
```

```
1297 12B2                    .LIST   LES
1298 12B2                    ;
1299 12B2                    ;                  ... DETECTOR MONITORING ROUTINE ...
1300 12B2                    EDET:
1301 12B2 90A6 A             LD      AC0,@AEDMIT     ; FETCH TIMER
1302 12B3 E128 A             SKG     AC0,EDETI       ; SKIP IF DETECTOR MONITORING INTERVAL
1303 12B4                                            ;   HAS BEEN REACHED
1304 12B4 2126 A             JMP     EDETR
1305 12B5                    ;
1306 12B5 8C7C A             LD      AC3,AVCVC       ; BASE ADDRESS OF VEHICLE COUNTERS
1307 12B6                    ;
1308 12B6 8300 A EDET1:      LD      AC0,(AC3)       ; FETCH NEXT VEHICLE COUNTER
1309 12B7 E125 A             SKG     AC0,EDETM       ; SKIP IF GT MINIMUM COUNT
1310 12B8 2101 A             JMP     .+2             ; UNDERCOUNTING ERROR
1311 12B9 2119 A             JMP     EDET3           ; NO ERROR
1312 12BA                    ;
1313 12BA                    ;                  ... UNDERCOUNTING ERROR ...
1314 12BA 3E81 A             RCPY    AC3,AC2         ; COPY CURRENT VEHICLE COUNTER ADDRESS
1315 12BB 847C A             LD      AC1,AVCVC       ; BASE ADDRESS OF VEHICLE COUNTERS
1316 12BC 5101 A             CAI     AC1,C1          ; COMPUTE DETECTOR INDEX
1317 12BD 3600 A             RADD    AC1,AC2
1318 12BE E91F A             SKG     AC2,EDET32      ; SKIP IF INVALID INDEX
1319 12BF 2106 A             JMP     EDET2
1320 12C0                    ;
1321 12C0                    ;                  ... RECORD DETECTOR INDEX ERROR ...
1322 12C0 3981 A             RCPY    AC2,AC1         ; COPY ERROR DATUM TO AC1
1323 12C1 BCA7 A             ST      AC3,@AEDETT     ; STORE VEHICLE COUNTER ADDRESS IN TEMP
1324 12C2 8C9F A             LD      AC3,AEERR       ; BASE ADDRESS OF ERROR BUFFER
1325 12C3 2C4E A             JSR     @AERE5          ; AC1 HAS ERROR DATUM
1326 12C4 9CA7 A             LD      AC3,@AEDETT     ; RESTORE VEHICLE COUNTER ADDRESS
1327 12C5 210D A             JMP     EDET3
1328 12C6                    ;
1329 12C6                    ;                  ... RECORD ERROR CURRENT DETECTOR ...
1330 12C6 B8A7 A EDET2:      ST      AC2,@AEDETT     ; STORE DETECTOR INDEX IN TEMP LOC
1331 12C7 5E01 A             SHL     AC2,D1          ; MPY BY 2 FOR DISP IN ERROR BUFFER
1332 12C8 C8A8 A             ADD     AC2,AEDERR      ; ADD TO BASE ADDRESS
1333 12C9 A201 A             ST      AC0,D1(AC2)     ; STORE UNDERCOUNT VALUE
1334 12CA 8200 A             LD      AC0,D0(AC2)     ; INCREMENT ERROR COUNTER
1335 12CB 4801 A             AISZ    AC0,C1
1336 12CC 2100 A             JMP     .+1
1337 12CD A200 A             ST      AC0,D0(AC2)
1338 12CE                    ;
1339 12CE                    ;                  ... RECORD GENERAL UNDERCOUNTING ERROR ...
1340 12CE 94A7 A             LD      AC1,@AEDETT     ; TEMP HAS DETECTOR INDEX, ERROR DATUM
1341 12CF BCA7 A             ST      AC3,@AEDETT     ; STORE VEHICLE COUNTER ADDRESS IN TEMP
1342 12D0 8C9F A             LD      AC3,AEERR       ; BASE ADDRESS OF ERROR BUFFER
1343 12D1 2C4D A             JSR     @AERE4          ; AC1 HAS ERROR DATUM
1344 12D2 9CA7 A             LD      AC3,@AEDETT     ; RESTORE VEHICLE COUNTER ADDRESS
1345 12D3                    ;
1346 12D3 4C00 A EDET3:      LI      AC0,C0
1347 12D4 A300 A             ST      AC0,(AC3)       ; ZERO VEHICLE COUNTER
1348 12D5 4801 A             AISZ    AC3,C1          ; INCREMENT VEHICLE COUNTER ADDRESS
```

EXECUTIVE CPC - DETECTOR MONITORING ROUTINE

```
1349 12D6 2100 A          JMP     .+1
1350 12D7 ED07 A          SKG     AC3,EVCVC       ; SKIP IF ALL VEHICLE COUNTERS PROCESSED
1351 12D8 21DD A          JMP     EDET1
1352 12D9 4C00 A          LI      AC0,C0
1353 12DA B0A6 A          ST      AC0,@AEDMIT     ; ZERO DETECTOR MONITORING INT TIMER
1354 12DB                 ;
1355 12DB 0200 A EDETR:   RTS     D0              ; RETURN FROM EDET
1356 12DC                 ;
1357 12DC                 ;                 ••• LOCAL DATA •••
1358 12DC 2EE0 A EDETI:   .WORD   12000           ; DET MONITORING INT (0.1 SEC UNITS)
1359 12DD 0001 A EDETM:   .WORD   1               ; MINIMUM VEHICLE COUNT
1360 12DE 001F A EDET32:  .WORD   31              ; MAXIMUM DETECTOR INDEX (0 - 31)
1361 12DF 3134 A EVCVC:   .WORD   VCVC+DETS-1     ; ADDRESS OF LAST DETECTOR VEHICLE CTR
1362 12E0                                         ;    (BASE ADDR + NO. DETECTORS - 1)
1363 12E0                 ;
```

```
1366 12E0                .LIST   LES
1367 12E0                ;
1368 12E0                ;                  ... CONSTRUCT STATUS DISPLAY WORD ...
1369 12E0              ESDW:
1370 12E0                ;
1371 12E0                ;                  ... BITS 15 TO 11 ...
1372 12E0 90A2 A         LD      AC0,@AER123     ; R1,R2,R3,IN BITS 1 TO 3
1373 12E1 88A4 A         LD      AC2,AED23
1374 12E2 6A00 A         OR      AC0,(AC2)       ; D2,D3 IN BITS 4,5
1375 12E3 0A80 A         PFLG    SELF            ; ASSURE SEL = 0
1376 12E4 58FA A         ROR     AC0,D6          ; R1,R2,R3,D2,D3 IN BITS 11 TO 15
1377 12E5 6132 A         AND     AC0,HF800       ; ASSURE BITS 10 TO 0 RESET
1378 12E6 3181 A         RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1379 12E7                ;
1380 12E7                ;                  ... BIT 10 ...
1381 12E7 909D A         LD      AC0,@AEPST
1382 12E8 1103 A         BOC     CCEZ,.+4        ; BRANCH IF NO START PULSE
1383 12E9 3481 A         RCPY    AC1,AC0
1384 12EA 072A A         SETBIT  D10             ; START PULSE
1385 12EB 3181 A         RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1386 12EC                ;
1387 12EC                ;                  ... BIT 7 ...
1388 12EC 906E A         LD      AC0,@APIP
1389 12ED 1103 A         BOC     CCEZ,.+4        ; BRANCH IF NO PREEMPT IN PROGRESS
1390 12EE 3481 A         RCPY    AC1,AC0
1391 12EF 0727 A         SETBIT  D7              ; PREEMPT IN PROGRESS
1392 12F0 3181 A         RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1393 12F1                ;
1394 12F1                ;                  ... BIT 6 ...
1395 12F1 907B A         LD      AC0,@AVCBT      ; VEHICLE CLASSIFICATION FLAG
1396 12F2 1103 A         BOC     CCEZ,.+4        ; BRANCH IF NO RECENT BUS CLASS.
1397 12F3 3481 A         RCPY    AC1,AC0
1398 12F4 0726 A         SETBIT  D6              ; BUS CLASSIFIED DURING NEAR PAST
1399 12F5 3181 A         RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1400 12F6                ;
1401 12F6                ;                  ... BITS 5 THRU 0 REQUIRE MANUAL RESET ...
1402 12F6                ;
1403 12F6                ;                  ... BIT 5 ...
1404 12F6 909F A         LD      AC0,@AEERR
1405 12F7 6121 A         AND     AC0,HFFEF       ; IGNORE DETECTOR UNDERCOUNT ERROR
1406 12F8 1508 A         BOC     CCNZ,ESDW1      ; BRANCH IF ERROR
1407 12F9 906C A         LD      AC0,@AXERR
1408 12FA 1506 A         BOC     CCNZ,ESDW1      ; BRANCH IF ERROR
1409 12FB 906A A         LD      AC0,@ABERR
1410 12FC 1504 A         BOC     CCNZ,ESDW1      ; BRANCH IF ERROR
1411 12FD 9090 A         LD      AC0,@ATERR
1412 12FE 1502 A         BOC     CCNZ,ESDW1      ; BRANCH IF ERROR
1413 12FF 9077 A         LD      AC0,@APERR
1414 1300 1103 A         BOC     CCEZ,.+4
1415 1301              ESDW1:
1416 1301 3481 A         RCPY    AC1,AC0
1417 1302 0725 A         SETBIT  D5              ; SOFTWARE DETECTED ERROR
```

```
1418 1303 3181 A          RCPY    AC0,AC1         ;STORE TEMPORARY RESULT
1419 1304                 ;
1420 1304                 ;                 ••• BIT 4 •••
1421 1304 909F A          LD      AC0,@AEERR
1422 1305 6114 A          AND     AC0,H0010       ; EXTRACT DETECTOR UNDERCOUNT FLAG
1423 1306 1103 A          BOC     CCEZ,.+4        ; BRANCH IF NO DETECTOR UNDERCOUNT ERROR
1424 1307 3481 A          RCPY    AC1,AC0
1425 1308 0724 A          SETBIT  D4              ; DETECTOR UNDERCOUNT ERROR
1426 1309 3181 A          RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1427 130A                 ;
1428 130A                 ;                 ••• BIT 2 •••
1429 130A 9069 A          LD      AC0,@ABDIN      ; DISCRETE INPUT WORD
1430 130B 0756 A          SKBIT   D6              ; CMU CONFLICT INDICATION
1431 130C 2103 A          JMP     .+4
1432 130D 3481 A          RCPY    AC1,AC0
1433 130E 0722 A          SETBIT  D2              ; CMU CONFLICT
1434 130F 3181 A          RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1435 1310                 ;
1436 1310                 ;                 ••• BIT 1 •••
1437 1310 9069 A          LD      AC0,@ABDIN      ; DISCRETE INPUT WORD
1438 1311 075F A          SKBIT   D15             ; SKIP IF EXTERNAL DISCONNECT
1439 1312 2103 A          JMP     .+4
1440 1313 3481 A          RCPY    AC1,AC0
1441 1314 0721 A          SETBIT  D1              ; EXTERNAL DISCONNECT
1442 1315 3181 A          RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1443 1316                 ;
1444 1316 B46B A          ST      AC1,@AXBUF      ; STORE STATUS DISPLAY WORD
1445 1317                 ;
1446 1317 0200 A          RTS     D0              ; RETURN FROM ESDW
1447 1318                 ;
1448 1318                 ;                 ••• LOCAL DATA •••
1449 1318 F800 A HF800:   .WORD   X'F800          ; BITS 10 TO 0 RESET
1450 1319 FFEF A HFFEF:   .WORD   X'FFEF          ; BIT 4 RESET
1451 131A 0010 A H0010:   .WORD   X'0010          ; BIT 4 SET
1452 131B                 ;
1453 131B                 ;
```

```
131B                    .LIST   LES
131B            ;
131B            ;                   ... END OF CYCLE ROUTINE ...
131B            ;
131B            EEOC:
131B 4C01 A             LI      AC0,C1
131C B086 A             ST      AC0,@ATFST      ; SET 'WAIT FOR SYNCH START' FLAG
131D            ;
131D            ;                   ... SUBSEQUENT FNS MAY RESET THIS FLAG ...
131D            ;
131D            ;
131D            ;                   ... PREEMPT FUNCTIONS ...
131D 2903 A             JSR     EPEOC
131E            ;
131E            ;                   ... TIMING PLAN FUNCTIONS ...
131E 2C37 A             JSR     @ATNCY
131F            ;
131F            ;                   ... EXECUTIVE TIMING FUNCTIONS ...
131F 2913 A             JSR     ETEOC
1320            ;
1320 0200 A             RTS     D0              ; RETURN FROM EEOC
1321            ;
1321            ;                   ... END OF CYCLE PREEMPT FUNCTIONS ...
1321            EPEOC:
1321 9074 A             LD      AC0,@APFREQ     ; TEST FOR PREEMPT MOD OF THE PAST CYCLE
1322 1501 A             BOC     CCNZ,.+2        ; BRANCH IF PREEMPT MOD
1323 2102 A             JMP     .+3
1324 4C00 A             LI      AC0,C0
1325 B086 A             ST      AC0,@ATFST      ; RESET 'WAIT FOR SYNC START' FLAG
1326 4C00 A             LI      AC0,C0
1327 B074 A             ST      AC0,@APFREQ     ; RESET PREEMPT MOD FLAG
1328            ;
1328                                            ; CLEAR PREEMPT MONITOR INDEX FLAGS
1328 8873 A             LD      AC2,APMIF
1329 8200 A             LD      AC0,D0(AC2)
132A 60F0 A             AND     AC0,H7FFF       ; RESET BIT 15
132B A200 A             ST      AC0,D0(AC2)
132C 8201 A             LD      AC0,D1(AC2)
132D 60F0 A             AND     AC0,H7FFF       ; RESET BIT 15
132E A201 A             ST      AC0,D1(AC2)
132F 8202 A             LD      AC0,D2(AC2)
1330 60F0 A             AND     AC0,H7FFF       ; RESET BIT 15
1331 A202 A             ST      AC0,D2(AC2)
1332            ;
1332 0200 A             RTS     D0              ; RETURN FROM EPEOC
1333            ;
1333            ;                   ... END OF CYCLE EXECUTIVE TIMING ROUTINE ...
1333            ETEOC:
1333 8898 A             LD      AC2,AETCY       ; TIMING PLAN CYCLE TIMER
1334 8600 A             LD      AC1,D0(AC2)
1335 E601 A             SKG     AC1,D1(AC2)     ; SKIP IF GREATER THAN PREVIOUS MAXIMUM
1336 2102 A             JMP     ETEOC1
```

EXECUTIVE CPC - END OF CYCLE FUNCTIONS

```
1508 1337 A601 A          ST      AC1,D1(AC2)     ; STORE NEW MAXIMUM
1509 1338 2104 A          JMP     ETEOC2
1510 1339 3481 A ETEOC1:  RCPY    AC1,AC0
1511 133A D202 A          SUB     AC0,D2(AC2)
1512 133B 1201 A          BOC     CCZP,ETEOC2     ; BRANCH IF GREATER THAN PREVIOUS MIN.
1513 133C A602 A          ST      AC1,D2(AC2)
1514 133D 4000 A ETEOC2:  LI      AC1,C0
1515 133E A600 A          ST      AC1,D0(AC2)     ; ZERO CYCLE TIMER
1516 133F         ;
1517 133F 0200 A          RTS     D0              ;RETURN FROM ETEOC
1518 1340         ;
```

```
1521 1340                .LIST  LER
1522 1340          ;
1523 1340          ;                  ••• ERROR RECORDING ROUTINE •••
1524 1340          ;
1525 1340          ;                        UPON ENTRY, AC1 = ERROR DATUM
1526 1340          ;                                    AC3 = BASE ADDR OF ERROR BUFFER
1527 1340          ;                                    AC0 USED TO SET ERROR FLAG
1528 1340          ;                        ENTRY POINT IMPLIES ERROR TYPE
1529 1340          ;
1530 1340          ERE0:
1531 1340 A702 A           ST      AC1,D2(AC3)     ; STORE ERROR DATUM
1532 1341 8301 A           LD      AC0,D1(AC3)     ; FETCH ERROR COUNTER
1533 1342 4801 A           AISZ    AC0,C1          ; INCREMENT
1534 1343 2100 A           JMP     .+1
1535 1344 A301 A           ST      AC0,D1(AC3)
1536 1345 8300 A           LD      AC0,D0(AC3)
1537 1346 0720 A           SETBIT  D0              ; SET ERROR FLAG BIT 0
1538 1347 A300 A           ST      AC0,D0(AC3)
1539 1348 0200 A           RTS     D0              ; RETURN FROM ERE0
1540 1349          ;
1541 1349          ERE1:
1542 1349 A704 A           ST      AC1,D4(AC3)     ; STORE ERROR DATUM
1543 134A 8303 A           LD      AC0,D3(AC3)     ; FETCH ERROR COUNTER
1544 134B 4801 A           AISZ    AC0,C1          ; INCREMENT
1545 134C 2100 A           JMP     .+1
1546 134D A303 A           ST      AC0,D3(AC3)
1547 134E 8300 A           LD      AC0,D0(AC3)
1548 134F 0721 A           SETBIT  D1              ; SET ERROR FLAG BIT 1
1549 1350 A300 A           ST      AC0,D0(AC3)
1550 1351 0200 A           RTS     D0              ; RETURN FROM ERE1
1551 1352          ;
1552 1352          ERE2:
1553 1352 A706 A           ST      AC1,D6(AC3)     ; STORE ERROR DATUM
1554 1353 8305 A           LD      AC0,D5(AC3)     ; FETCH ERROR COUNTER
1555 1354 4801 A           AISZ    AC0,C1          ; INCREMENT
1556 1355 2100 A           JMP     .+1
1557 1356 A305 A           ST      AC0,D5(AC3)
1558 1357 8300 A           LD      AC0,D0(AC3)
1559 1358 0722 A           SETBIT  D2              ; SET ERROR FLAG BIT 2
1560 1359 A300 A           ST      AC0,D0(AC3)
1561 135A 0200 A           RTS     D0              ; RETURN FROM ERE2
1562 135B          ;
1563 135B          ERE3:
1564 135B A708 A           ST      AC1,D8(AC3)     ; STORE ERROR DATUM
1565 135C 8307 A           LD      AC0,D7(AC3)     ; FETCH ERROR COUNTER
1566 135D 4801 A           AISZ    AC0,C1          ; INCREMENT
1567 135E 2100 A           JMP     .+1
1568 135F A307 A           ST      AC0,D7(AC3)
1569 1360 8300 A           LD      AC0,D0(AC3)
1570 1361 0723 A           SETBIT  D3              ; SET ERROR FLAG BIT 3
1571 1362 A300 A           ST      AC0,D0(AC3)
1572 1363 0200 A           RTS     D0              ; RETURN FROM ERE3
```

```
1573 1364                ;
1574 1364                ERE4:
1575 1364 A70A A         ST      AC1,D10(AC3)    ; STORE ERROR DATUM
1576 1365 8309 A         LD      AC0,D9(AC3)     ; FETCH ERROR COUNTER
1577 1366 4801 A         AISZ    AC0,C1          ; INCREMENT
1578 1367 2100 A         JMP     .+1
1579 1368 A309 A         ST      AC0,D9(AC3)
1580 1369 8300 A         LD      AC0,D0(AC3)
1581 136A 0724 A         SETBIT  D4              ; SET ERROR FLAG BIT 4
1582 136B A300 A         ST      AC0,D0(AC3)
1583 136C 0200 A         RTS     D0              ; RETURN FROM ERE4
1584 136D                ;
1585 136D                ERE5:
1586 136D A70C A         ST      AC1,D12(AC3)    ; STORE ERROR DATUM
1587 136E 830B A         LD      AC0,D11(AC3)    ; FETCH ERROR COUNTER
1588 136F 4801 A         AISZ    AC0,C1          ; INCREMENT
1589 1370 2100 A         JMP     .+1
1590 1371 A30B A         ST      AC0,D11(AC3)
1591 1372 8300 A         LD      AC0,D0(AC3)
1592 1373 0725 A         SETBIT  D5              ; SET ERROR FLAG BIT 5
1593 1374 A300 A         ST      AC0,D0(AC3)
1594 1375 0200 A         RTS     D0              ; RETURN FROM ERE5
1595 1376                ;
1596 1376                ERE6:
1597 1376 A70E A         ST      AC1,D14(AC3)    ; STORE ERROR DATUM
1598 1377 830D A         LD      AC0,D13(AC3)    ; FETCH ERROR COUNTER
1599 1378 4801 A         AISZ    AC0,C1          ; INCREMENT
1600 1379 2100 A         JMP     .+1
1601 137A A30D A         ST      AC0,D13(AC3)
1602 137B 8300 A         LD      AC0,D0(AC3)
1603 137C 0726 A         SETBIT  D6              ; SET ERROR FLAG BIT 6
1604 137D A300 A         ST      AC0,D0(AC3)
1605 137E 0200 A         RTS     D0              ; RETURN FROM ERE6
1606 137F                ;
1607 137F                ERE7:
1608 137F A710 A         ST      AC1,D16(AC3)    ; STORE ERROR DATUM
1609 1380 830F A         LD      AC0,D15(AC3)    ; FETCH ERROR COUNTER
1610 1381 4801 A         AISZ    AC0,C1          ; INCREMENT
1611 1382 2100 A         JMP     .+1
1612 1383 A30F A         ST      AC0,D15(AC3)
1613 1384 8300 A         LD      AC0,D0(AC3)
1614 1385 0727 A         SETBIT  D7              ; SET ERROR FLAG BIT 7
1615 1386 A300 A         ST      AC0,D0(AC3)
1616 1387 0200 A         RTS     D0              ; RETURN FROM ERE7
1617 1388                ;
1618 1388                ERE8:
1619 1388 A712 A         ST      AC1,D18(AC3)    ; STORE ERROR DATUM
1620 1389 8311 A         LD      AC0,D17(AC3)    ; FETCH ERROR COUNTER
1621 138A 4801 A         AISZ    AC0,C1          ; INCREMENT
1622 138B 2100 A         JMP     .+1
1623 138C A311 A         ST      AC0,D17(AC3)
1624 138D 8300 A         LD      AC0,D0(AC3)
```

```
1625 138E 0728 A        SETBIT  D8              ; SET ERROR FLAG BIT 8
1626 138F A300 A        ST      AC0,D0(AC3)
1627 1390 0200 A        RTS     D0              ; RETURN FROM ERE8
1628 1391               ;
1629 1391               ERE9:
1630 1391 A714 A        ST      AC1,D20(AC3)    ; STORE ERROR DATUM
1631 1392 8313 A        LD      AC0,D19(AC3)    ; FETCH ERROR COUNTER
1632 1393 4801 A        AISZ    AC0,C1          ; INCREMENT
1633 1394 2100 A        JMP     .+1
1634 1395 A313 A        ST      AC0,D19(AC3)
1635 1396 8300 A        LD      AC0,D0(AC3)
1636 1397 0729 A        SETBIT  D9              ; SET ERROR FLAG BIT 9
1637 1398 A300 A        ST      AC0,D0(AC3)
1638 1399 0200 A        RTS     D0              ; RETURN FROM ERE9
1639 139A               ;
1640 139A               ERE10:
1641 139A A716 A        ST      AC1,D22(AC3)    ; STORE ERROR DATUM
1642 139B 8315 A        LD      AC0,D21(AC3)    ; FETCH ERROR COUNTER
1643 139C 4801 A        AISZ    AC0,C1          ; INCREMENT
1644 139D 2100 A        JMP     .+1
1645 139E A315 A        ST      AC0,D21(AC3)
1646 139F 8300 A        LD      AC0,D0(AC3)
1647 13A0 072A A        SETBIT  D10             ; SET ERROR FLAG BIT 10
1648 13A1 A300 A        ST      AC0,D0(AC3)
1649 13A2 0200 A        RTS     D0              ; RETURN FROM ERE10
1650 13A3               ;
1651 13A3               ERE11:
1652 13A3 A718 A        ST      AC1,D24(AC3)    ; STORE ERROR DATUM
1653 13A4 8317 A        LD      AC0,D23(AC3)    ; FETCH ERROR COUNTER
1654 13A5 4801 A        AISZ    AC0,C1          ; INCREMENT
1655 13A6 2100 A        JMP     .+1
1656 13A7 A317 A        ST      AC0,D23(AC3)
1657 13A8 8300 A        LD      AC0,D0(AC3)
1658 13A9 072B A        SETBIT  D11             ; SET ERROR FLAG BIT 11
1659 13AA A300 A        ST      AC0,D0(AC3)
1660 13AB 0200 A        RTS     D0              ; RETURN FROM ERE11
1661 13AC               ;
1662 13AC               ERE12:
1663 13AC A71A A        ST      AC1,D26(AC3)    ; STORE ERROR DATUM
1664 13AD 8319 A        LD      AC0,D25(AC3)    ; FETCH ERROR COUNTER
1665 13AE 4801 A        AISZ    AC0,C1          ; INCREMENT
1666 13AF 2100 A        JMP     .+1
1667 13B0 A319 A        ST      AC0,D25(AC3)
1668 13B1 8300 A        LD      AC0,D0(AC3)
1669 13B2 072C A        SETBIT  D12             ; SET ERROR FLAG BIT 12
1670 13B3 A300 A        ST      AC0,D0(AC3)
1671 13B4 0200 A        RTS     D0              ; RETURN FROM ERE12
1672 13B5               ;
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1673 13B5                    .PAGE
1674 13B5                    .ASECT
1675 13B5 1400 A             .=X'1400
1676 1400                    ;
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1679 1400                .LIST  LPP
1680 1400          ;
1681 1400          ;                    ... PROGRAMMABLE PANEL ROUTINE ...
1682 1400          ;
1683 1400          ;              (EXECUTED DURING RESTART INITIALIZATION ONLY)
1684 1400          ;
1685 1400          EPAN:
1686 1400          ;
1687 1400          ;                    ... INPUT PROG. PANEL DATA ...
1688 1400 2C3E A           JSR    @ABPAN
1689 1401          ;
1690 1401          ;                    ... CLEAR ERROR FLAGS ...
1691 1401 4C00 A           LI     AC0,C0
1692 1402 B0CD A           ST     AC0,@AEP1E      ; PLAN 1
1693 1403 B0CE A           ST     AC0,@AEP2E      ; PLAN 2
1694 1404 B0CF A           ST     AC0,@AEP3E      ; PLAN 3
1695 1405 B0D0 A           ST     AC0,@AEPDVE     ; DATA VALIDITY
1696 1406          ;
1697 1406          ;                    ... TURN OFF ERROR LIGHTS ...
1698 1406 8CEA A           LD     AC3,APP1U       ; PERIPHERAL DEVICE ADDRESS PLAN 1
1699 1407 2C57 A           JSR    @AXLOF1
1700 1408          ;
1701 1408 8CEB A           LD     AC3,APP2U       ; PERIPHERAL DEVICE ADDRESS PLAN 2
1702 1409 2C57 A           JSR    @AXLOF1
1703 140A          ;
1704 140A 8CEC A           LD     AC3,APP3U       ; PERIPHERAL DEVICE ADDRESS PLAN 3
1705 140B 2C57 A           JSR    @AXLOF1
1706 140C          ;
1707 140C 8CE9 A           LD     AC3,APPDU       ; DEVICE ADDRESS DATA VALIDITY LIGHT
1708 140D 2C59 A           JSR    @AXLOF2
1709 140E          ;
1710 140E          ;                    ... COMPUTE SUM OF FIXED INTERVALS IN PLAN 1 ...
1711 140E 888B A           LD     AC2,ATPM1
1712 140F 2951 A           JSR    EPFI
1713 1410 8CC5 A           LD     AC3,AEPFT
1714 1411 A700 A           ST     AC1,D0(AC3)     ; STORE SUM
1715 1412          ;
1716 1412          ;                    ... COMPUTE SUM OF FIXED INTERVALS IN PLAN 2 ...
1717 1412 888C A           LD     AC2,ATPM2
1718 1413 294D A           JSR    EPFI
1719 1414 8CC5 A           LD     AC3,AEPFT
1720 1415 A701 A           ST     AC1,D1(AC3)     ; STORE SUM
1721 1416          ;
1722 1416          ;                    ... COMPUTE SUM OF FIXED INTERVALS IN PLAN 3 ...
1723 1416 888D A           LD     AC2,ATPM3
1724 1417 2949 A           JSR    EPFI
1725 1418 8CC5 A           LD     AC3,AEPFT
1726 1419 A702 A           ST     AC1,D2(AC3)     ; STORE SUM
1727 141A          ;
1728 141A          ;                    ... TEST ADJUSTABLE INTERVALS FOR 0 DURATION ...
1729 141A 888B A           LD     AC2,ATPM1
1730 141B 9493 A           LD     AC1,@ATAI1      ; RELATIVE INDEX OF ADJ INT 1
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1731 141C 3600 A          RADD    AC1,AC2         ; COMPUTE ADDRESS OF ADJUSTABLE INT 1
1732 141D 8200 A          LD      AC0,D0(AC2)     ; FETCH DURATION
1733 141E 1107 A          BOC     CCEZ,EPAN1      ; BRANCH IF ZERO, NO ERROR
1734 141F 8CD1 A          LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
1735 1420                 ;
1736 1420                 ;                  ... RECORD ERROR IN MASTER TIMING PLAN ...
1737 1420                 EPANE:
1738 1420 3981 A          RCPY    AC2,AC1         ; SAVE ADDRESS AS ERROR DATUM
1739 1421 2C49 A          JSR     @AERE0
1740 1422 2C3A A EPANE1:  JSR     @AXWDT          ; ISSUE RESET PULSE TO WATCHDOG TIMER
1741 1423                 ;
1742 1423 2C2F A          JSR     @AEADC          ; FATAL ERROR, DISCONNECT, NO RETURN
1743 1424                 ;
1744 1424 2100 A          JMP     .+1             ; THIS INST SHOULD NEVER BE REACHED
1745 1425 21FE A          JMP     .-1
1746 1426                 ;
1747 1426                 EPAN1:
1748 1426 888B A          LD      AC2,ATPM1
1749 1427 9494 A          LD      AC1,@ATAI2      ; RELATIVE INDEX OF ADJ INT 2
1750 1428 3600 A          RADD    AC1,AC2         ; COMPUTE ADDRESS OF ADJUSTABLE INT 2
1751 1429 8200 A          LD      AC0,D0(AC2)     ; FETCH DURATION
1752 142A 1102 A          BOC     CCEZ,.+3        ; BRANCH IF ZERO, NO ERROR
1753 142B 8CD1 A          LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
1754 142C 21F3 A          JMP     EPANE
1755 142D                 ;
1756 142D 888C A          LD      AC2,ATPM2
1757 142E 9493 A          LD      AC1,@ATAI1      ; RELATIVE INDEX OF ADJ INT 1
1758 142F 3600 A          RADD    AC1,AC2         ; COMPUTE ADDRESS OF ADJUSTABLE INT 1
1759 1430 8200 A          LD      AC0,D0(AC2)     ; FETCH DURATION
1760 1431 1102 A          BOC     CCEZ,.+3        ; BRANCH IF ZERO, NO ERROR
1761 1432 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
1762 1433 21EC A          JMP     EPANE
1763 1434                 ;
1764 1434 888C A          LD      AC2,ATPM2
1765 1435 9494 A          LD      AC1,@ATAI2      ; RELATIVE INDEX OF ADJ INT 2
1766 1436 3600 A          RADD    AC1,AC2         ; COMPUTE ADDRESS OF ADJUSTABLE INT 2
1767 1437 8200 A          LD      AC0,D0(AC2)     ; FETCH DURATION
1768 1438 1102 A          BOC     CCEZ,.+3        ; BRANCH IF ZERO, NO ERROR
1769 1439 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
1770 143A 21E5 A          JMP     EPANE
1771 143B                 ;
1772 143B 888D A          LD      AC2,ATPM3
1773 143C 9493 A          LD      AC1,@ATAI1      ; RELATIVE INDEX OF ADJ INT 1
1774 143D 3600 A          RADD    AC1,AC2         ; COMPUTE ADDRESS OF ADJUSTABLE INT 1
1775 143E 8200 A          LD      AC0,D0(AC2)     ; FETCH DURATION
1776 143F 1102 A          BOC     CCEZ,.+3        ; BRANCH IF ZERO, NO ERROR
1777 1440 8CD3 A          LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
1778 1441 21DE A          JMP     EPANE
1779 1442                 ;
1780 1442 888D A          LD      AC2,ATPM3
1781 1443 9494 A          LD      AC1,@ATAI2      ; RELATIVE INDEX OF ADJ INT 2
1782 1444 3600 A          RADD    AC1,AC2         ; COMPUTE ADDRESS OF ADJUSTABLE INT 2
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1783 1445 8200 A          LD      AC0,D0(AC2)     ; FETCH DURATION
1784 1446 1102 A          BOC     CCEZ,.+3        ; BRANCH IF ZERO, NO ERROR
1785 1447 8CD3 A          LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
1786 1448 21D7 A          JMP     EPANE
1787 1449               ;
1788 1449               ;                  ... PROCESS PLAN 1 DATA ...
1789 1449 2C41 A          JSR     @AEPP1
1790 144A               ;
1791 144A               ;                  ... PROCESS PLAN 2 DATA ...
1792 144A 2C42 A          JSR     @AEPP2
1793 144B               ;
1794 144B               ;                  ... PROCESS PLAN 3 DATA ...
1795 144B 2C43 A          JSR     @AEPP3
1796 144C               ;
1797 144C               ;                  ... TEST ERROR FLAGS ...
1798 144C 90CD A          LD      AC0,@AEP1E      ; PLAN 1
1799 144D 1102 A          BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1800 144E 8CEA A          LD      AC3,APP1U
1801 144F 2C56 A          JSR     @AXLON1         ; TURN ON ERROR LIGHT
1802 1450               ;
1803 1450 90CE A          LD      AC0,@AEP2E      ; PLAN 2
1804 1451 1102 A          BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1805 1452 8CEB A          LD      AC3,APP2U
1806 1453 2C56 A          JSR     @AXLON1         ; TURN ON ERROR LIGHT
1807 1454               ;
1808 1454 90CF A          LD      AC0,@AEP3E      ; PLAN 3
1809 1455 1102 A          BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1810 1456 8CEC A          LD      AC3,APP3U
1811 1457 2C56 A          JSR     @AXLON1         ; TURN ON ERROR LIGHT
1812 1458               ;
1813 1458 90D0 A          LD      AC0,@AEPDVE     ; DATA VALIDITY
1814 1459 1103 A          BOC     CCEZ,.+4        ; BRANCH IF NO ERROR
1815 145A 8CE9 A          LD      AC3,APPDU
1816 145B 2C58 A          JSR     @AXLON2         ; TURN ON ERROR LIGHT
1817 145C 21C5 A          JMP     EPANE1          ; DISCONNECT
1818 145D               ;
1819 145D               ;                  ... UPDATE DATA BASE ...
1820 145D 2C44 A          JSR     @AEPUP
1821 145E               ;
1822 145E 8CE9 A          LD      AC3,APPDU
1823 145F 2C57 A          JSR     @AXLOF1         ; ASSURE PENDING INPUT LIGHT IS OFF
1824 1460               ;
1825 1460 0200 A          RTS     D0              ; RETURN FROM EPAN
1826 1461               ;
1827 1461               ;              ... COMPUTE SUM OF INTERVALS IN MASTER PLAN ...
1828 1461
1829 1461               ;                       AC2 = BASE ADDRESS OF MASTER TIMING PLAN
1830 1461               ;
1831 1461               ;                       AC1 RETURNS SUM OF INTERVAL DURATIONS
1832 1461               ;
1833 1461             EPFI:
1834 1461 4D00 A          LI      AC1,C0          ; CLEAR SUM
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1835 1462 8200 A EPFI1:  LD    AC0,D0(AC2)     ; FETCH INTERVAL DURATION
1836 1463 1102 A         DOC   CCEZ,.+3        ; BRANCH IF ZERO
1837 1464 1B04 A         BOC   CCZN,EPFIR      ; BRANCH IF NEGATIVE, END OF PLAN
1838 1465 3100 A         RADD  AC0,AC1         ; ADD DURATION TO SUM
1839 1466 4A01 A         AISZ  AC2,C1          ; INCREMENT ADDRESS
1840 1467 2100 A         JMP   .+1
1841 1468 21F9 A         JMP   EPFI1           ; CONTINUE LOOP
1842 1469                ;
1843 1469 0200 A EPFIR:  RTS   D0              ; RETURN FROM EPFI
1844 146A                ;
1845 146A                ;                  ••• LOCAL DATA •••
1846 146A 00C8 A EPCY:   .WORD 200             ; MAXIMUM CYCLE LENGTH (SECONDS)
1847 146B 00C8 A EPIN1:  .WORD 200             ; LIMIT ON MAXIMUM EXTENSION (SECONDS)
1848 146C 000A A E10:    .WORD 10              ; CONSTANT FOR DIVISION
1849 146D 0064 A E100:   .WORD 100             ; PERCENTAGE CONVERSION CONSTANT
1850 146E                ;
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146E                    .LIST   LPP
146E            ;
146E            ;                   ... PROG PANEL MONITOR ROUTINE ...
146E            ;
146E            ;                       (EXECUTED DURING RTC SEQUENCE)
146E            ;
146E            EPPM:
146E 90BB A             LD      AC0,@ABPPD      ; FETCH PROG PANEL DISCRETES
146F 6153 A             AND     AC0,H0400       ; EXTRACT INPUT REQUEST SWITCH STATE
1470 1502 A             BOC     CCNZ,.+3        ; BRANCH IF INPUT REQUEST ON
1471            ;
1471 B0C6 A             ST      AC0,@AEPUF      ; (AC0) = 0, ASSURE UPDATE FLAG RESET
1472 2105 A             JMP     EPPM1
1473            ;
1473 90C8 A             LD      AC0,@AEPIR      ; FETCH PREVIOUS STATE OF INPUT REQ
1474 1503 A             BOC     CCNZ,.+4        ; BRANCH IF SWITCH WAS ON
1475            ;
1475 4CFF A             LI      AC0,CM1
1476 B0C7 A             ST      AC0,@AEPCF      ; SET FLAG FOR INPUT OF THUMBWHEELS
1477 814B A             LD      AC0,H0400       ; RESTORE SWITCH DATUM
1478            ;
1478 B0C8 A     EPPM1:  ST      AC0,@AEPIR      ; SAVE STATE OF INPUT REQUEST
1479            ;
1479 90C7 A             LD      AC0,@AEPCF
147A 1147 A             BOC     CCEZ,EPPMR      ; BRANCH IF NOT INPUT PROCESSING SEQ
147B            ;
147B 88C7 A             LD      AC2,AEPCF       ; ADDRESS OF COMPUTATION FLAG
147C            ;
147C 4DFF A             LI      AC1,CM1
147D F600 A             SKNE    AC1,(AC2)       ; SKIP IF NOT THUMBWHEEL INPUT
147E 2101 A             JMP     .+2
147F 210B A             JMP     EPPM2
1480            ;
1480            ;                   ... CLEAR ERROR FLAGS ...
1480 4C00 A             LI      AC0,C0
1481 B0CD A             ST      AC0,@AEP1E      ; PLAN 1
1482 B0CE A             ST      AC0,@AEP2E      ; PLAN 2
1483 B0CF A             ST      AC0,@AEP3E      ; PLAN 3
1484 B0D0 A             ST      AC0,@AEPDVE     ; DATA VALIDITY
1485            ;
1485            ;                   ... TURN OFF ERROR LIGHT ...
1485            ;
1485 8CE9 A             LD      AC3,APPDU       ; DEVICE ADDRESS DATA VALIDITY LIGHT
1486 2C59 A             JSR     @AXLOF2
1487            ;
1487 2C3E A             JSR     @ABPAN          ; INPUT THUMBWHEEL DATA
1488            ;
1488 4D01 A             LI      AC1,C1
1489 B4C7 A             ST      AC1,@AEPCF      ; SET FLAG FOR PLAN 1 PROCESSING
148A 2137 A             JMP     EPPMR
148B            ;
148B 4D01 A     EPPM2:  LI      AC1,C1
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1905 148C F600 A          SKNE    AC1,(AC2)       ; SKIP IF NOT PLAN 1 PROCESSING
1906 148D 2101 A          JMP     .+2
1907 148E 210A A          JMP     EPPM3
1908 148F           ;
1909 148F           ;                       ••• TURN OFF ERROR LIGHT •••
1910 148F 8CEA A          LD      AC3,APP1U       ; PERIPHERAL DEVICE ADDRESS PLAN 1
1911 1490 2C57 A          JSR     @AXLOF1
1912 1491           ;
1913 1491 2C41 A          JSR     @AEPP1          ; PLAN 1 PROCESSING
1914 1492           ;
1915 1492           ;                       ••• TEST ERROR FLAG •••
1916 1492 90CD A          LD      AC0,@AEP1E      ; PLAN 1
1917 1493 1102 A          BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1918 1494 8CEA A          LD      AC3,APP1U
1919 1495 2C56 A          JSR     @AXLON1         ; TURN ON ERROR LIGHT
1920 1496           ;
1921 1496 4D02 A          LI      AC1,C2
1922 1497 B4C7 A          ST      AC1,@AEPCF      ; SET FLAG FOR PLAN 2 PROCESSING
1923 1498 2129 A          JMP     EPPMR
1924 1499           ;
1925 1499 4D02 A EPPM3:   LI      AC1,C2
1926 149A F600 A          SKNE    AC1,(AC2)       ; SKIP IF NOT PLAN 2 PROCESSING
1927 149B 2101 A          JMP     .+2
1928 149C 210A A          JMP     EPPM4
1929 149D           ;
1930 149D           ;                       ••• TURN OFF ERROR LIGHT •••
1931 149D           ;
1932 149D 8CEB A          LD      AC3,APP2U       ; PERIPHERAL DEVICE ADDRESS PLAN 2
1933 149E 2C57 A          JSR     @AXLOF1
1934 149F           ;
1935 149F 2C42 A          JSR     @AEPP2          ; PLAN 2 PROCESSING
1936 14A0           ;
1937 14A0           ;                       ••• TEST ERROR FLAG •••
1938 14A0 90CE A          LD      AC0,@AEP2E      ; PLAN 2
1939 14A1 1102 A          BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1940 14A2 8CEB A          LD      AC3,APP2U
1941 14A3 2C56 A          JSR     @AXLON1         ; TURN ON ERROR LIGHT
1942 14A4           ;
1943 14A4 4D03 A          LI      AC1,C3
1944 14A5 B4C7 A          ST      AC1,@AEPCF      ; SET FLAG FOR PLAN 3 PROCESSING
1945 14A6 211B A          JMP     EPPMR
1946 14A7           ;
1947 14A7 4D03 A EPPM4:   LI      AC1,C3
1948 14A8 F600 A          SKNE    AC1,(AC2)       ; SKIP IF NOT PLAN 3 PROCESSING
1949 14A9 2101 A          JMP     .+2
1950 14AA 210A A          JMP     EPPM5
1951 14AB           ;
1952 14AB           ;                       ••• TURN OFF ERROR LIGHT •••
1953 14AB 8CEC A          LD      AC3,APP3U       ; PERIPHERAL DEVICE ADDRESS PLAN 3
1954 14AC 2C57 A          JSR     @AXLOF1
1955 14AD           ;
1956 14AD 2C43 A          JSR     @AEPP3          ; PLAN 3 PROCESSING
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1957 14AE                ;
1958 14AE                ;                      ... TEST ERROR FLAG ...
1959 14AE 90CF A         LD      AC0,@AEP3E     ; PLAN 3
1960 14AF 1102 A         BOC     CCEZ,.+3       ; BRANCH IF NO ERROR
1961 14B0 8CEC A         LD      AC3,APP3U
1962 14B1 2C56 A         JSR     @AXLON1        ; TURN ON ERROR LIGHT
1963 14B2                ;
1964 14B2 4D04 A         LI      AC1,C4
1965 14B3 B4C7 A         ST      AC1,@AEPCF     ; SET FLAG FOR COMPLETION OF INPUT PROC
1966 14B4 210D A         JMP     EPPMR
1967 14B5                ;
1968 14B5 4D04 A EPPM5:  LI      AC1,C4
1969 14B6 F600 A         SKNE    AC1,(ACZ)      ; SKIP IF NOT COMPLETION OF INPUT PROC
1970 14B7 2101 A         JMP     .+2
1971 14B8 2109 A         JMP     EPPMR
1972 14B9                ;
1973 14B9                ;                      ... TEST ERROR FLAG ...
1974 14B9 90D0 A         LD      AC0,@AEPDVE    ; DATA VALIDITY
1975 14BA 1103 A         BOC     CCEZ,.+4       ; BRANCH IF NO ERROR
1976 14BB 8CE9 A         LD      AC3,APPDU
1977 14BC 2C58 A         JSR     @AXLON2        ; TURN ON ERROR LIGHT
1978 14BD 2102 A         JMP     .+3            ; DATA VALIDITY ERROR, DO NOT URDATE
1979 14BE                ;
1980 14BE 4D01 A         LI      AC1,C1
1981 14BF B4C6 A         ST      AC1,@AEPUF     ; SET FLAG FOR DATA BASE UPDATE ENABLE
1982 14C0                ;
1983 14C0 4D00 A         LI      AC1,C0
1984 14C1 B4C7 A         ST      AC1,@AEPCF     ; RESET COMPUTE FLAG
1985 14C2                ;
1986 14C2 0200 A EPPMR:  RTS     D0             ; RETURN FROM EPPM
1987 14C3                ;
1988 14C3                ;                      ... LOCAL DATA ...
1989 14C3 0400 A H0400:  .WORD   X'0400         ; BIT 10 SET
1990 14C4                ;
1991 14C4                ;
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14C4                    .LIST   LPP
14C4            ;
14C4            ;                   ... PROCESS PROG. PANEL DATA FOR PLAN 1 ...
14C4            EPP1:
14C4            ;
14C4            ;                   ... PROCESS CYCLE LENGTH ...
14C4 88BC A             LD      AC2,ABPD1
14C5 8200 A             LD      AC0,D0(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
14C6 2C46 A             JSR     @AEPBI3         ; CONVERTED VALUE RETURNED IN AC1
14C7 212B A             JMP     EPP10           ; DATA VALIDITY ERROR
14C8 8CBF A             LD      AC3,AEPD1
14C9 A700 A             ST      AC1,D0(AC3)     ; SAVE CONVERTED INTEGER VALUE (SECONDS)
14CA 88C9 A             LD      AC2,AEPCY       ; MAXIMUM CYCLE LENGTH TEST (SECONDS)
14CB E600 A             SKG     AC1,D0(AC2)     ; SKIP IF .GT. MAXIMUM
14CC 2107 A             JMP     .+8
14CD            ;
14CD            ;                   ... RECORD CYCLE LENGTH INPUT ERROR ...
14CD 8CD1 A             LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
14CE 2C51 A             JSR     @AERE8          ; AC1 = ERROR DATUM
14CF 4C01 A             LI      AC0,C1
14D0 B0CD A             ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
14D1 94C9 A             LD      AC1,@AEPCY      ; SET CYCLE LENGTH TO MAXIMUM (SECONDS)
14D2 8CBF A             LD      AC3,AEPD1
14D3 A700 A             ST      AC1,D0(AC3)     ; SAVE MAXIMUM CYCLE LENGTH (SECONDS)
14D4            ;
14D4 2C47 A             JSR     @AEM10          ; CONVERT TO 0.1 SECOND UNITS IN AC1
14D5 8CC2 A             LD      AC3,AEPCD1
14D6 A703 A             ST      AC1,D3(AC3)     ; SAVE CYCLE LENGTH (0.1 SEC)
14D7            ;
14D7 88C5 A             LD      AC2,AEPFT       ; MINIMUM CYCLE LENGTH TEST (0.1 SEC)
14D8 8200 A             LD      AC0,D0(AC2)     ; SUM OF FIXED INTERVALS
14D9 5001 A             CAI     AC0,C1          ; NEGATE
14DA 3400 A             RADD    AC1,AC0         ; AC0 = ADJ. TIME IF NON-NEG.
14DB 1B02 A             BOC     CCZN,.+3        ; BRANCH IF CYCLE .LE. MINIMUM
14DC A301 A             ST      AC0,D1(AC3)     ; SAVE ADJUSTABLE TIME IN ADJ. INT. 2
14DD 2109 A             JMP     .+10
14DE            ;
14DE            ;                   ... CYCLE LENGTH INPUT ERROR (TOO SHORT) ...
14DE 4C00 A             LI      AC0,C0          ; NO ADJUSTABLE TIME
14DF A301 A             ST      AC0,D1(AC3)     ; SAVE 0 IN ADJUSTABLE INTERVAL 2
14E0            ;
14E0 8200 A             LD      AC0,D0(AC2)     ; RESTORE MIN. SUM OF FIXED INTERVALS
14E1 8CC2 A             LD      AC3,AEPCD1
14E2 A303 A             ST      AC0,D3(AC3)     ; STORE MIN CYCLE (0.1 SEC)
14E3 8CD1 A             LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
14E4 2C51 A             JSR     @AERE8          ; AC1 = ERROR DATUM
14E5 4C01 A             LI      AC0,C1
14E6 B0CD A             ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
14E7            ;
14E7            ;                   ... COMPUTE MAX DWELL TIME FOR SYNCH (24% OF CYCLE) ...
14E7 8CBF A             LD      AC3,AEPD1
14E8 8700 A             LD      AC1,D0(AC3)     ; CYCLE LENGTH (SECONDS)
```

```
2046 14F9 2C48 A          JSR     @AEM24          ; MULTIPLY BY 24
2047 14EA 4C00 A          LI      AC0,C0          ; PREPARE FOR DIVIDE
2048 14EB 88CC A          LD      AC2,AE10        ; *10/100 TO GET 0.1 SEC UNITS
2049 14EC 0690 A          DIV     D0(AC2)
     14ED 0000 A
2050 14EE 8CC2 A          LD      AC3,AEPCD1
2051 14EF A708 A          ST      AC1,D8(AC3)     ; MAX DWELL 24% OF CYCLE (0.1 SEC)
2052 14F0                 ;
2053 14F0                 ;                       ... COMPUTE START PULSE DURATION (3% OF CYCLE) ...
2054 14F0 5DFD A          SHR     AC1,D3          ; DIVIDE BY 8
2055 14F1 A707 A          ST      AC1,D7(AC3)     ; START PULSE DURATION 3% OF CYCLE
2056 14F2 2105 A          JMP     .+6
2057 14F3                 ;
2058 14F3                 ;                       ... RECORD CYCLE LENGTH VALIDITY ERROR ...
2059 14F3                 EPP10:
2060 14F3 8CD1 A          LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2061 14F4 2C4A A          JSR     @AERE1          ; AC1 = ERROR DATUM
2062 14F5 4C01 A          LI      AC0,C1
2063 14F6 B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2064 14F7 B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2065 14F8                 ;
2066 14F8                 ;                       ... PROCESS OFFSET 1 ...
2067 14F8 88BC A          LD      AC2,ABPD1
2068 14F9 8201 A          LD      AC0,D1(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2069 14FA 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2070 14FB 2110 A          JMP     EPP11           ; DATA VALIDITY ERROR
2071 14FC 8CBF A          LD      AC3,AEPD1
2072 14FD A701 A          ST      AC1,D1(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2073 14FE E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2074 14FF 2106 A          JMP     .+7
2075 1500                 ;
2076 1500                 ;                       ... RECORD OFFSET INPUT ERROR ...
2077 1500 8CD1 A          LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2078 1501 2C52 A          JSR     @AERE9          ; AC1 = ERROR DATUM
2079 1502 4C01 A          LI      AC0,C1
2080 1503 B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2081 1504 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2082 1505 2103 A          JMP     .+4
2083 1506                 ;
2084 1506                 ;                       ... COMPUTE RESET ...
2085 1506 D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2086 1507 5101 A          CAI     AC1,C1          ; NEGATE
2087 1508 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
2088 1509 8CC2 A          LD      AC3,AEPCD1
2089 150A A704 A          ST      AC1,D4(AC3)     ; SAVE RESET (0.1 SECONDS)
2090 150B 2105 A          JMP     .+6
2091 150C                 ;
2092 150C                 ;                       ... RECORD OFFSET DATA VALIDITY ERROR ...
2093 150C 8CD1 A EPP11:   LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2094 150D 2C4B A          JSR     @AERE2          ; AC1 = ERROR DATUM
2095 150E 4C01 A          LI      AC0,C1
2096 150F B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
```

```
2097 1510 B0D0 A          ST    AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2098 1511               ;
2099 1511               ;                  ... PROCESS OFFSET 2 ...
2100 1511 88BC A          LD    AC2,ABPD1
2101 1512 8202 A          LD    AC0,D2(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2102 1513 2C46 A          JSR   @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2103 1514 2110 A          JMP   EPP12           ; DATA VALIDITY ERROR
2104 1515 8CBF A          LD    AC3,AEPD1
2105 1516 A702 A          ST    AC1,D2(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2106 1517 E700 A          SKG   AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2107 1518 2106 A          JMP   .+7
2108 1519               ;
2109 1519               ;                  ... RECORD OFFSET INPUT ERROR ...
2110 1519 8CD1 A          LD    AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2111 151A 2C53 A          JSR   @AERE10         ; AC1 = ERROR DATUM
2112 151B 4C01 A          LI    AC0,C1
2113 151C B0CD A          ST    AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2114 151D 4DF6 A          LI    AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2115 151E 2103 A          JMP   .+4
2116 151F               ;
2117 151F               ;                  ... COMPUTE RESET ...
2118 151F D700 A          SUB   AC1,D0(AC3)     ; OFFSET - CYCLE
2119 1520 5101 A          CAI   AC1,C1          ; NEGATE
2120 1521 2C47 A          JSR   @AEM10          ; MULTIPLY AC1 BY 10
2121 1522 8CC2 A          LD    AC3,AEPCD1
2122 1523 A705 A          ST    AC1,D5(AC3)     ; SAVE RESET (0.1 SECONDS)
2123 1524 2105 A          JMP   .+6
2124 1525               ;
2125 1525               ;                  ... RECORD OFFSET DATA VALIDITY ERROR ...
2126 1525 8CD1 A EPP12:   LD    AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2127 1526 2C4C A          JSR   @AERE3          ; AC1 = ERROR DATUM
2128 1527 4C01 A          LI    AC0,C1
2129 1528 B0CD A          ST    AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2130 1529 B0D0 A          ST    AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2131 152A               ;
2132 152A               ;                  ... PROCESS OFFSET 3 ...
2133 152A 88BC A          LD    AC2,ABPD1
2134 152B 8203 A          LD    AC0,D3(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2135 152C 2C46 A          JSR   @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2136 152D 2110 A          JMP   EPP13           ; DATA VALIDITY ERROR
2137 152E 8CBF A          LD    AC3,AEPD1
2138 152F A703 A          ST    AC1,D3(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2139 1530 E700 A          SKG   AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2140 1531 2106 A          JMP   .+7
2141 1532               ;
2142 1532               ;                  ... RECORD OFFSET INPUT ERROR ...
2143 1532 8CD1 A          LD    AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2144 1533 2C54 A          JSR   @AERE11         ; AC1 = ERROR DATUM
2145 1534 4C01 A          LI    AC0,C1
2146 1535 B0CD A          ST    AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2147 1536 4DF6 A          LI    AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2148 1537 2103 A          JMP   .+4
```

```
2149 1538                ;
2150 1538                ;                    ... COMPUTE RESET ...
2151 1538 D700 A                 SUB     AC1,D0(AC3)      ; OFFSET - CYCLE
2152 1539 5101 A                 CAI     AC1,C1           ; NEGATE
2153 153A 2C47 A                 JSP     @AEM10           ; MULTIPLY AC1 BY 10
2154 153B 8CC2 A                 LD      AC3,AEPCD1
2155 153C A706 A                 ST      AC1,D6(AC3)      ; SAVE RESET (0.1 SECONDS)
2156 153D 2105 A                 JMP     .+6
2157 153E                ;
2158 153E                ;                    ... RECORD OFFSET DATA VALIDITY ERROR ...
2159 153E 8CD1 A EPP13:  LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
2160 153F 2C4D A                 JSR     @AERE4           ; AC1 = ERROR DATUM
2161 1540 4C01 A                 LI      AC0,C1
2162 1541 B0CD A                 ST      AC0,@AEP1E       ; SET ERROR FLAG FOR PLAN 1
2163 1542 B0D0 A                 ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
2164 1543                ;
2165 1543                ;                    ... PROCESS MSG SPLIT % ...
2166 1543 88BC A                 LD      AC2,ABPD1
2167 1544 8204 A                 LD      AC0,D4(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2168 1545 2C45 A                 JSR     @AEPBI2          ; CONVERT DATUM TO INTEGER IN AC1
2169 1546 2114 A                 JMP     EPP14            ; DATA VALIDITY ERROR
2170 1547 8CBF A                 LD      AC3,AEPD1
2171 1548 A704 A                 ST      AC1,D4(AC3)      ; SAVE CONVERTED VALUE (%)
2172 1549                ;
2173 1549 88C2 A                 LD      AC2,AEPCD1
2174 154A 8201 A                 LD      AC0,D1(AC2)      ; FETCH ADJUSTABLE TIME
2175 154B 1B01 A                 BOC     CCZN,.+2         ; TEST FOR POSITIVE
2176 154C 2102 A                 JMP     .+3
2177 154D                ;
2178 154D 4000 A                 LI      AC1,C0           ; STORE 0 FOR BOTH ADJ. INTS.
2179 154E 2106 A                 JMP     .+7
2180 154F                ;
2181 154F 4C00 A                 LI      AC0,C0           ; PREPARE FOR MULTIPLY
2182 1550 0680 A                 MPY     D1(AC2)          ; MSG(%) * ADJ. TIME (0.1 SEC)
     1551 0001 A
2183 1552 88CB A                 LD      AC2,AE100        ; DIVIDE BY 100
2184 1553 0690 A                 DIV     D0(AC2)
     1554 0000 A
2185 1555                ;
2186 1555 88C2 A                 LD      AC2,AEPCD1
2187 1556 A600 A                 ST      AC1,D0(AC2)      ; STORE ADJ. INTERVAL 1
2188 1557 5101 A                 CAI     AC1,C1           ; SUBTRACT ADJ. INT. 1 FROM TOTAL
2189 1558 C601 A                 ADD     AC1,D1(AC2)
2190 1559 A601 A                 ST      AC1,D1(AC2)      ; STORE ADJ. INT. 2
2191 155A 2105 A                 JMP     .+6
2192 155B                ;
2193 155B                ;                    ... RECORD MSG DATA VALIDITY ERROR ...
2194 155B 8CD1 A EPP14:  LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
2195 155C 2C4E A                 JSR     @AERE5           ; AC1 = ERROR DATUM
2196 155D 4C01 A                 LI      AC0,C1
2197 155E B0CD A                 ST      AC0,@AEP1E       ; SET ERROR FLAG FOR PLAN 1
2198 155F B0D0 A                 ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
```

```
1560          ;
1560          ;                    ... PROCESS INT1 ...
1560 88BC A          LD      AC2,ABPD1
1561 8205 A          LD      AC0,D5(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
1562 2C46 A          JSR     @AEPBI3          ; CONVERT DATUM TO INTEGER IN AC1
1563 210E A          JMP     EPP15            ; DATA VALIDITY ERROR
1564 8CBF A          LD      AC3,AEPD1
1565 A705 A          ST      AC1,D5(AC3)      ; SAVE CONVERTED VALUE (SECONDS)
1566 88CA A          LD      AC2,AEPIN1
1567 E600 A          SKG     AC1,D0(AC2)      ; SKIP IF INT1 .GT. LIMIT
1568 2105 A          JMP     .+6
1569          ;
1569          ;                    ... RECORD INT1 INPUT ERROR ...
1569 8CD1 A          LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
156A 2C55 A          JSR     @AERE12          ; AC1 = ERROR DATUM
156B 4C01 A          LI      AC0,C1
156C B0CD A          ST      AC0,@AEP1E       ; SET ERROR FLAG FOR PLAN 1
156D 94CA A          LD      AC1,@AEPIN1      ; SET MAXIMUM EXTENSION TO LIMIT (SEC)
156E          ;
156E 2C47 A          JSR     @AEM10           ; MULTIPLY AC1 BY 10
156F 8CC2 A          LD      AC3,AEPCD1
1570 A702 A          ST      AC1,D2(AC3)      ; STORE MAXIMUM EXTENSION (0.1 SEC)
1571 2105 A          JMP     .+6
1572          ;
1572          ;                    ... RECORD INT1 DATA VALIDITY ERROR ...
1572 8CD1 A EPP15:   LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
1573 2C4F A          JSR     @AERE6           ; AC1 = ERROR DATUM
1574 4C01 A          LI      AC0,C1
1575 B0CD A          ST      AC0,@AEP1E       ; SET ERROR FLAG FOR PLAN 1
1576 B0D0 A          ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
1577          ;
1577 0200 A          RTS     D0               ; RETURN FROM EPP1
1578          ;
```

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1578                    .LIST   LPP
1578            ;
1578            ;                   ... PROCESS PROG. PANEL DATA FOR PLAN 2 ...
1578            EPP2:
1578            ;
1578            ;                   ... PROCESS CYCLE LENGTH ...
1578 88BD A             LD      AC2,ABPD2
1579 8200 A             LD      AC0,D0(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
157A 2C46 A             JSR     @AEPBI3         ; CONVERTED VALUE RETURNED IN AC1
157B 212B A             JMP     EPP20           ; DATA VALIDITY ERROR
157C 8CC0 A             LD      AC3,AEPD2
157D A700 A             ST      AC1,D0(AC3)     ; SAVE CONVERTED INTEGER VALUE (SECONDS)
157E 88C9 A             LD      AC2,AEPCY       ; MAXIMUM CYCLE LENGTH TEST (SECONDS)
157F E600 A             SKG     AC1,D0(AC2)     ; SKIP IF .GT. MAXIMUM
1580 2107 A             JMP     .+8
1581            ;
1581            ;                   ... RECORD CYCLE LENGTH INPUT ERROR ...
1581 8CD2 A             LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
1582 2C51 A             JSR     @AERE8          ; AC1 = ERROR DATUM
1583 4C01 A             LI      AC0,C1
1584 B0CE A             ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
1585 94C9 A             LD      AC1,@AEPCY      ; SET CYCLE LENGTH TO MAXIMUM (SECONDS)
1586 8CC0 A             LD      AC3,AEPD2
1587 A700 A             ST      AC1,D0(AC3)     ; SAVE MAXIMUM CYCLE LENGTH (SECONDS)
1588            ;
1588 2C47 A             JSR     @AEM10          ; CONVERT TO 0.1 SECOND UNITS IN AC1
1589 8CC3 A             LD      AC3,AEPCD2
158A A703 A             ST      AC1,D3(AC3)     ; SAVE CYCLE LENGTH (0.1 SEC)
158B            ;
158B 88C5 A             LD      AC2,AEPFT       ; MINIMUM CYCLE LENGTH TEST (0.1 SEC)
158C 8201 A             LD      AC0,D1(AC2)     ; SUM OF FIXED INTERVALS
158D 5001 A             CAI     AC0,C1          ; NEGATE
158E 3400 A             RADD    AC1,AC0         ; AC0 = ADJ. TIME IF NON-NEG.
158F 1B02 A             BOC     CCZN,.+3        ; BRANCH IF CYCLE .LE. MINIMUM
1590 A301 A             ST      AC0,D1(AC3)     ; SAVE ADJUSTABLE TIME IN ADJ. INT. 2
1591 2109 A             JMP     .+10
1592            ;
1592            ;                   ... CYCLE LENGTH INPUT ERROR (TOO SHORT) ...
1592 4C00 A             LI      AC0,C0          ; NO ADJUSTABLE TIME
1593 A301 A             ST      AC0,D1(AC3)     ; SAVE 0 IN ADJUSTABLE INTERVAL 2
1594            ;
1594 8200 A             LD      AC0,D0(AC2)     ; RESTORE MIN, SUM OF FIXED INTERVALS
1595 8CC3 A             LD      AC3,AEPCD2
1596 A303 A             ST      AC0,D3(AC3)     ; STORE MIN CYCLE (0.1 SEC)
1597 8CD2 A             LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
1598 2C51 A             JSR     @AERE8          ; AC1 = ERROR DATUM
1599 4C01 A             LI      AC0,C1
159A B0CE A             ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
159B            ;
159B            ;                   ... COMPUTE MAX DWELL TIME FOR SYNCH (24% OF CYCLE) ...
159B 8CC0 A             LD      AC3,AEPD2
159C 8700 A             LD      AC1,D0(AC3)     ; CYCLE LENGTH (SECONDS)
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2286 159D 2C48 A          JSR     @AEM24          ; MULTIPLY BY 24
2287 159E 4C00 A          LI      AC0,C0          ; PREPARE FOR DIVIDE
2288 159F 89CC A          LD      AC2,AE10        ; *10/100 TO GET 0.1 SEC UNITS
2289 15A0 0690 A          DIV     D0(AC2)
     15A1 0000 A
2290 15A2 8CC3 A          LD      AC3,AEPCD2
2291 15A3 A708 A          ST      AC1,D8(AC3)     ; MAX DWELL 24% OF CYCLE (0.1 SEC)
2292 15A4                 ;
2293 15A4                 ;                       ••• COMPUTE START PULSE DURATION (3% OF CYCLE) •••
2294 15A4 5DFD A          SHR     AC1,D3          ; DIVIDE BY 8
2295 15A5 A707 A          ST      AC1,D7(AC3)     ; START PULSE DURATION 3% OF CYCLE
2296 15A6 2105 A          JMP     .+6
2297 15A7                 ;
2298 15A7                 ;                       ••• RECORD CYCLE LENGTH VALIDITY ERROR •••
2299 15A7                 EPP20:
2300 15A7 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2301 15A8 2C4A A          JSR     @AERE1          ; AC1 = ERROR DATUM
2302 15A9 4C01 A          LI      AC0,C1
2303 15AA B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2304 15AB B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2305 15AC                 ;
2306 15AC                 ;                       ••• PROCESS OFFSET 1 •••
2307 15AC 88BD A          LD      AC2,ADPD2
2308 15AD 8201 A          LD      AC0,D1(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2309 15AE 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2310 15AF 2110 A          JMP     EPP21           ; DATA VALIDITY ERROR
2311 15B0 8CC0 A          LD      AC3,AEPD2
2312 15B1 A701 A          ST      AC1,D1(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2313 15B2 E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2314 15B3 2106 A          JMP     .+7
2315 15B4                 ;
2316 15B4                 ;                       ••• RECORD OFFSET INPUT ERROR •••
2317 15B4 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2318 15B5 2C52 A          JSR     @AERE9          ; AC1 = ERROR DATUM
2319 15B6 4C01 A          LI      AC0,C1
2320 15B7 B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2321 15B8 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2322 15B9 2103 A          JMP     .+4
2323 15BA                 ;
2324 15BA                 ;                       ••• COMPUTE RESET •••
2325 15BA D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2326 15BB 5101 A          CAI     AC1,C1          ; NEGATE
2327 15BC 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
2328 15BD 8CC3 A          LD      AC3,AEPCD2
2329 15BE A704 A          ST      AC1,D4(AC3)     ; SAVE RESET (0.1 SECONDS)
2330 15BF 2105 A          JMP     .+6
2331 15C0                 ;
2332 15C0                 ;                       ••• RECORD OFFSET DATA VALIDITY ERROR •••
2333 15C0 8CD2 A EPP21:   LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2334 15C1 2C4B A          JSR     @AERE2          ; AC1 = ERROR DATUM
2335 15C2 4C01 A          LI      AC0,C1
2336 15C3 B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
```

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2337 15C4 B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2338 15C5               ;
2339 15C5               ;                   ... PROCESS OFFSET 2 ...
2340 15C5 88BD A          LD      AC2,ABPD2
2341 15C6 8202 A          LD      AC0,D2(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2342 15C7 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2343 15C8 2110 A          JMP     EPP22           ; DATA VALIDITY ERROR
2344 15C9 8CC0 A          LD      AC3,AEPD2
2345 15CA A702 A          ST      AC1,D2(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2346 15CB E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2347 15CC 2106 A          JMP     .+7
2348 15CD               ;
2349 15CD               ;                   ... RECORD OFFSET INPUT ERROR ...
2350 15CD 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2351 15CE 2C53 A          JSR     @AERE10         ; AC1 = ERROR DATUM
2352 15CF 4C01 A          LI      AC0,C1
2353 15D0 B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2354 15D1 40F6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2355 15D2 2103 A          JMP     .+4
2356 15D3               ;
2357 15D3               ;                   ... COMPUTE RESET ...
2358 15D3 D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2359 15D4 5101 A          CAI     AC1,C1          ; NEGATE
2360 15D5 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
2361 15D6 8CC3 A          LD      AC3,AEPCD2
2362 15D7 A705 A          ST      AC1,D5(AC3)     ; SAVE RESET (0.1 SECONDS)
2363 15D8 2105 A          JMP     .+6
2364 15D9               ;
2365 15D9               ;                   ... RECORD OFFSET DATA VALIDITY ERROR ...
2366 15D9 8CD2 A EPP22:   LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2367 15DA 2C4C A          JSR     @AERE3          ; AC1 = ERROR DATUM
2368 15DB 4C01 A          LI      AC0,C1
2369 15DC B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2370 15DD B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2371 15DE               ;
2372 15DE               ;                   ... PROCESS OFFSET 3 ...
2373 15DE 88BD A          LD      AC2,ABPD2
2374 15DF 8203 A          LD      AC0,D3(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2375 15E0 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2376 15E1 2110 A          JMP     EPP23           ; DATA VALIDITY ERROR
2377 15E2 8CC0 A          LD      AC3,AEPD2
2378 15E3 A703 A          ST      AC1,D3(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2379 15E4 E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2380 15E5 2106 A          JMP     .+7
2381 15E6               ;
2382 15E6               ;                   ... RECORD OFFSET INPUT ERROR ...
2383 15E6 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2384 15E7 2C54 A          JSR     @AERE11         ; AC1 = ERROR DATUM
2385 15E8 4C01 A          LI      AC0,C1
2386 15E9 B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2387 15EA 40F6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2388 15EB 2103 A          JMP     .+4
```

```
2389 15EC                ;
2390 15EC                ;                    ••• COMPUTE RESET •••
2391 15EC D700 A                 SUB     AC1,D0(AC3)      ; OFFSET - CYCLE
2392 15ED 5101 A                 CAI     AC1,C1           ; NEGATE
2393 15EE 2C47 A                 JSR     @AEM10           ; MULTIPLY AC1 BY 10
2394 15EF 8CC3 A                 LD      AC3,AEPCD2
2395 15F0 A706 A                 ST      AC1,D6(AC3)      ; SAVE RESET (0.1 SECONDS)
2396 15F1 2105 A                 JMP     .+6
2397 15F2                ;
2398 15F2                ;                    ••• RECORD OFFSET DATA VALIDITY ERROR •••
2399 15F2 8CD2 A EPP23:  LD      AC3,AEPEF2       ; BASE ADDRESS OF ERROR BUFFER
2400 15F3 2C4D A                 JSR     @AERE4           ; AC1 = ERROR DATUM
2401 15F4 4C01 A                 LI      AC0,C1
2402 15F5 B0CE A                 ST      AC0,@AEP2E       ; SET ERROR FLAG FOR PLAN 2
2403 15F6 B0D0 A                 ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
2404 15F7                ;
2405 15F7                ;                    ••• PROCESS MSG SPLIT % •••
2406 15F7 88BD A                 LD      AC2,ABPD2
2407 15F8 8204 A                 LD      AC0,D4(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2408 15F9 2C45 A                 JSR     @AEPBI2          ; CONVERT DATUM TO INTEGER IN AC1
2409 15FA 2114 A                 JMP     EPP24            ; DATA VALIDITY ERROR
2410 15FB 8CC0 A                 LD      AC3,AEPD2
2411 15FC A704 A                 ST      AC1,D4(AC3)      ; SAVE CONVERTED VALUE (%)
2412 15FD                ;
2413 15FD 88C3 A                 LD      AC2,AEPCD2
2414 15FE 8201 A                 LD      AC0,D1(AC2)      ; FETCH ADJUSTABLE TIME
2415 15FF 1B01 A                 BOC     CCZN,.+2         ; TEST FOR POSITIVE
2416 1600 2102 A                 JMP     .+3
2417 1601                ;
2418 1601 4D00 A                 LI      AC1,C0           ; STORE 0 FOR BOTH ADJ. INTS.
2419 1602 2106 A                 JMP     .+7
2420 1603                ;
2421 1603 4C00 A                 LI      AC0,C0           ; PREPARE FOR MULTIPLY
2422 1604 0680 A                 MPY     D1(AC2)          ; MSG(%) * ADJ. TIME (0.1 SEC)
     1605 0001 A
2423 1606 88CB A                 LD      AC2,AE100        ; DIVIDE BY 100
2424 1607 0690 A                 DIV     D0(AC2)
     1608 0000 A
2425 1609                ;
2426 1609 88C3 A                 LD      AC2,AEPCD2
2427 160A A600 A                 ST      AC1,D0(AC2)      ; STORE ADJ. INTERVAL 1
2428 160B 5101 A                 CAI     AC1,C1           ; SUBTRACT ADJ. INT. 1 FROM TOTAL
2429 160C C601 A                 ADD     AC1,D1(AC2)
2430 160D A601 A                 ST      AC1,D1(AC2)      ; STORE ADJ. INT. 2
2431 160E 2105 A                 JMP     .+6
2432 160F                ;
2433 160F                ;                    ••• RECORD MSG DATA VALIDITY ERROR •••
2434 160F 8CD2 A EPP24:  LD      AC3,AEPEF2       ; BASE ADDRESS OF ERROR BUFFER
2435 1610 2C4E A                 JSR     @AERE5           ; AC1 = ERROR DATUM
2436 1611 4C01 A                 LI      AC0,C1
2437 1612 B0CE A                 ST      AC0,@AEP2E       ; SET ERROR FLAG FOR PLAN 2
2438 1613 B0D0 A                 ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
```

```
2439 1614          ;
2440 1614          ;                    ... PROCESS INT1 ...
2441 1614 88BD A           LD      AC2,ABPD2
2442 1615 8205 A           LD      AC0,D5(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2443 1616 2C46 A           JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2444 1617 210E A           JMP     EPP25           ; DATA VALIDITY ERROR
2445 1618 88C0 A           LD      AC3,AEPD2
2446 1619 A705 A           ST      AC1,D5(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2447 161A 88CA A           LD      AC2,AEPIN1
2448 161B E600 A           SKG     AC1,D0(AC2)     ; SKIP IF INT1 .GT. LIMIT
2449 161C 2105 A           JMP     .+6
2450 161D          ;
2451 161D          ;                    ... RECORD INT1 INPUT ERROR ...
2452 161D 8CD2 A           LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2453 161E 2C55 A           JSR     @AERE12         ; AC1 = ERROR DATUM
2454 161F 4C01 A           LI      AC0,C1
2455 1620 B0CE A           ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2456 1621 94CA A           LD      AC1,@AEPIN1     ; SET MAXIMUM EXTENSION TO LIMIT (SEC)
2457 1622          ;
2458 1622 2C47 A           JSR     @AEM10          ; MULTIPLY AC1 BY 10
2459 1623 8CC3 A           LD      AC3,AEPCD2
2460 1624 A702 A           ST      AC1,D2(AC3)     ; STORE MAXIMUM EXTENSION (0.1 SEC)
2461 1625 2105 A           JMP     .+6
2462 1626          ;
2463 1626          ;                    ... RECORD INT1 DATA VALIDITY ERROR ...
2464 1626 8CD2 A EPP25:    LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2465 1627 2C4F A           JSR     @AERE6          ; AC1 = ERROR DATUM
2466 1628 4C01 A           LI      AC0,C1
2467 1629 B0CE A           ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2468 162A B0D0 A           ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2469 162B          ;
2470 162B 0200 A           RTS     D0              ; RETURN FROM EPP2
2471 162C          ;
```

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2474 162C                .LIST   LPP
2475 162C          ;
2476 162C          ;                    ... PROCESS PROG. PANEL DATA FOR PLAN 3 ...
2477 162C          EPP3:
2478 162C          ;
2479 162C          ;                    ... PROCESS CYCLE LENGTH ...
2480 162C 885E A           LD      AC2,ABPD3
2481 162D 8200 A           LD      AC0,D0(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2482 162E 2C46 A           JSR     @AEPBI3          ; CONVERTED VALUE RETURNED IN AC1
2483 162F 212D A           JMP     EPP30            ; DATA VALIDITY ERROR
2484 1630 8CC1 A           LD      AC3,AEPD3
2485 1631 A700 A           ST      AC1,D0(AC3)      ; SAVE CONVERTED INTEGER VALUE (SECONDS)
2486 1632 88C9 A           LD      AC2,AEPCY        ; MAXIMUM CYCLE LENGTH TEST (SECONDS)
2487 1633 E600 A           SKG     AC1,D0(AC2)      ; SKIP IF .GT. MAXIMUM
2488 1634 2107 A           JMP     .+8
2489 1635          ;
2490 1635          ;                    ... RECORD CYCLE LENGTH INPUT ERROR ...
2491 1635 8CD3 A           LD      AC3,AEPEF3       ; BASE ADDRESS OF ERROR BUFFER
2492 1636 2C51 A           JSR     @AERE8           ; AC1 = ERROR DATUM
2493 1637 4C01 A           LI      AC0,C1
2494 1638 B0CF A           ST      AC0,@AEP3E       ; SET ERROR FLAG FOR PLAN 3
2495 1639 94C9 A           LD      AC1,@AEPCY       ; SET CYCLE LENGTH TO MAXIMUM (SECONDS)
2496 163A 8CC1 A           LD      AC3,AEPD3
2497 163B A700 A           ST      AC1,D0(AC3)      ; SAVE MAXIMUM CYCLE LENGTH (SECONDS)
2498 163C          ;
2499 163C 2C47 A           JSR     @AEM10           ; CONVERT TO 0.1 SECOND UNITS IN AC1
2500 163D 8CC4 A           LD      AC3,AEPCD3
2501 163E A703 A           ST      AC1,D3(AC3)      ; SAVE CYCLE LENGTH (0.1 SEC)
2502 163F          ;
2503 163F 88C5 A           LD      AC2,AEPFT        ; MINIMUM CYCLE LENGTH TEST (0.1 SEC)
2504 1640 8202 A           LD      AC0,D2(AC2)      ; SUM OF FIXED INTERVALS
2505 1641 5001 A           CAI     AC0,C1           ; NEGATE
2506 1642 3400 A           RADD    AC1,AC0          ; AC0 = ADJ. TIME IF NON-NEG.
2507 1643 1B02 A           BOC     CCZN,.+3         ; BRANCH IF CYCLE .LE. MINIMUM
2508 1644 A301 A           ST      AC0,D1(AC3)      ; SAVE ADJUSTABLE TIME IN ADJ. INT. 2
2509 1645 2109 A           JMP     .+10
2510 1646          ;
2511 1646          ;                    ... CYCLE LENGTH INPUT ERROR (TOO SHORT) ...
2512 1646 4C00 A           LI      AC0,C0           ; NO ADJUSTABLE TIME
2513 1647 A301 A           ST      AC0,D1(AC3)      ; SAVE 0 IN ADJUSTABLE INTERVAL 2
2514 1648          ;
2515 1648 8200 A           LD      AC0,D0(AC2)      ; RESTORE MIN, SUM OF FIXED INTERVALS
2516 1649 8CC4 A           LD      AC3,AEPCD3
2517 164A A303 A           ST      AC0,D3(AC3)      ; STORE MIN CYCLE (0.1 SEC)
2518 164B 8CD3 A           LD      AC3,AEPEF3       ; BASE ADDRESS OF ERROR BUFFER
2519 164C 2C51 A           JSR     @AERE8           ; AC1 = ERROR DATUM
2520 164D 4C01 A           LI      AC0,C1
2521 164E B0CF A           ST      AC0,@AEP3E       ; SET ERROR FLAG FOR PLAN 3
2522 164F          ;
2523 164F          ;                    ... COMPUTE MAX DWELL TIME FOR SYNCH (24% OF CYCLE) ...
2524 164F 8CC1 A           LD      AC3,AEPD3
2525 1650 8700 A           LD      AC1,D0(AC3)      ; CYCLE LENGTH (SECONDS)
```

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2526 1651 2C48 A          JSR    @AEM24          ; MULTIPLY BY 24
2527 1652 4C00 A          LI     AC0,C0          ; PREPARE FOR DIVIDE
2528 1653 88CC A          LD     AC2,AE10        ; *10/100 TO GET 0.1 SEC UNITS
2529 1654 0690 A          DIV    D0(AC2)
     1655 0000 A
2530 1656 8CC4 A          LD     AC3,AEPCD3
2531 1657 A708 A          ST     AC1,D8(AC3)     ; MAX DWELL 24% OF CYCLE (0.1 SEC)
2532 1658              ;
2533 1658              ;                  ... COMPUTE START PULSE DURATION (3% OF CYCLE) ...
2534 1658 5DFD A          SHR    AC1,D3          ; DIVIDE BY 8
2535 1659 A707 A          ST     AC1,D7(AC3)     ; START PULSE DURATION 3% OF CYCLE
2536 165A 2105 A          JMP    .+6
2537 165B              ;
2538 165B              ;                  ... RECORD CYCLE LENGTH VALIDITY ERROR ...
2539 165B              EPP30:
2540 165B 8CD3 A          LD     AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2541 165C 2C4A A          JSR    @AERE1          ; AC1 = ERROR DATUM
2542 165D 4C01 A          LI     AC0,C1
2543 165E B0CF A          ST     AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2544 165F B0D0 A          ST     AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2545 1660              ;
2546 1660              ;                  ... PROCESS OFFSET 1 ...
2547 1660 88BE A          LD     AC2,ABPD3
2548 1661 8201 A          LD     AC0,D1(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2549 1662 2C46 A          JSR    @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2550 1663 2110 A          JMP    EPP31           ; DATA VALIDITY ERROR
2551 1664 8CC1 A          LD     AC3,AEPD3
2552 1665 A701 A          ST     AC1,D1(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2553 1666 E700 A          SKG    AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2554 1667 2106 A          JMP    .+7
2555 1668              ;
2556 1668              ;                  ... RECORD OFFSET INPUT ERROR ...
2557 1668 8CD3 A          LD     AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2558 1669 2C52 A          JSR    @AERE9          ; AC1 = ERROR DATUM
2559 166A 4C01 A          LI     AC0,C1
2560 166B B0CF A          ST     AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2561 166C 4DF6 A          LI     AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2562 166D 2103 A          JMP    .+4
2563 166E              ;
2564 166E              ;                  ... COMPUTE RESET ...
2565 166E D700 A          SUB    AC1,D0(AC3)     ; OFFSET - CYCLE
2566 166F 5101 A          CAI    AC1,C1          ; NEGATE
2567 1670 2C47 A          JSR    @AEM10          ; MULTIPLY AC1 BY 10
2568 1671 8CC4 A          LD     AC3,AEPCD3
2569 1672 A704 A          ST     AC1,D4(AC3)     ; SAVE RESET (0.1 SECONDS)
2570 1673 2105 A          JMP    .+6
2571 1674              ;
2572 1674              ;                  ... RECORD OFFSET DATA VALIDITY ERROR ...
2573 1674 8CD3 A EPP31:   LD     AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2574 1675 2C4B A          JSR    @AERE2          ; AC1 = ERROR DATUM
2575 1676 4C01 A          LI     AC0,C1
2576 1677 B0CF A          ST     AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
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2577 1678 B0D0 A          ST    AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2578 1679               ;
2579 1679               ;                       ... PROCESS OFFSET 2 ...
2580 1679 88BE A          LD    AC2,AEPD3
2581 167A 8202 A          LD    AC0,D2(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2582 167B 2C46 A          JSR   @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2583 167C 2110 A          JMP   EPP32           ; DATA VALIDITY ERROR
2584 167D 8CC1 A          LD    AC3,AEPD3
2585 167E A702 A          ST    AC1,D2(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2586 167F E700 A          SKG   AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2587 1680 2106 A          JMP   .+7
2588 1681               ;
2589 1681               ;                       ... RECORD OFFSET INPUT ERROR ...
2590 1681 8CD3 A          LD    AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2591 1682 2C53 A          JSR   @AERE10         ; AC1 = ERROR DATUM
2592 1683 4C01 A          LI    AC0,C1
2593 1684 B0CF A          ST    AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2594 1685 4DF6 A          LI    AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2595 1686 2103 A          JMP   .+4
2596 1687               ;
2597 1687               ;                       ... COMPUTE RESET ...
2598 1687 D700 A          SUB   AC1,D0(AC3)     ; OFFSET - CYCLE
2599 1688 5101 A          CAI   AC1,C1          ; NEGATE
2600 1689 2C47 A          JSR   @AEM10          ; MULTIPLY AC1 BY 10
2601 168A 8CC4 A          LD    AC3,AEPCD3
2602 168B A705 A          ST    AC1,D5(AC3)     ; SAVE RESET (0.1 SECONDS)
2603 168C 2105 A          JMP   .+6
2604 168D               ;
2605 168D               ;                       ... RECORD OFFSET DATA VALIDITY ERROR ...
2606 168D 8CD3 A EPP32:   LD    AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2607 168E 2C4C A          JSR   @AERE3          ; AC1 = ERROR DATUM
2608 168F 4C01 A          LI    AC0,C1
2609 1690 B0CF A          ST    AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2610 1691 B0D0 A          ST    AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2611 1692               ;
2612 1692               ;                       ... PROCESS OFFSET 3 ...
2613 1692 88BE A          LD    AC2,AEPD3
2614 1693 8203 A          LD    AC0,D3(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2615 1694 2C46 A          JSR   @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2616 1695 2110 A          JMP   EPP33           ; DATA VALIDITY ERROR
2617 1696 8CC1 A          LD    AC3,AEPD3
2618 1697 A703 A          ST    AC1,D3(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2619 1698 E700 A          SKG   AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2620 1699 2106 A          JMP   .+7
2621 169A               ;
2622 169A               ;                       ... RECORD OFFSET INPUT ERROR ...
2623 169A 8CD3 A          LD    AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2624 169B 2C54 A          JSR   @AERE11         ; AC1 = ERROR DATUM
2625 169C 4C01 A          LI    AC0,C1
2626 169D B0CF A          ST    AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2627 169E 4DF6 A          LI    AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2628 169F 2103 A          JMP   .+4
```

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2629 16A0                ;
2630 16A0                ;                    ... COMPUTE RESET ...
2631 16A0 D700 A         SUB     AC1,D0(AC3)      ; OFFSET - CYCLE
2632 16A1 5101 A         CAI     AC1,C1           ; NEGATE
2633 16A2 2C47 A         JSR     @AEM10           ; MULTIPLY AC1 BY 10
2634 16A3 8CC4 A         LD      AC3,AEPCD3
2635 16A4 A706 A         ST      AC1,D6(AC3)      ; SAVE RESET (0.1 SECONDS)
2636 16A5 2105 A         JMP     .+6
2637 16A6                ;
2638 16A6                ;                    ... RECORD OFFSET DATA VALIDITY ERROR ...
2639 16A6 8CD3 A EPP33:  LD      AC3,AEPEF3       ; BASE ADDRESS OF ERROR BUFFER
2640 16A7 2C4D A         JSR     @AERE4           ; AC1 = ERROR DATUM
2641 16A8 4C01 A         LI      AC0,C1
2642 16A9 B0CF A         ST      AC0,@AEP3E       ; SET ERROR FLAG FOR PLAN 3
2643 16AA B0D0 A         ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
2644 16AB                ;
2645 16AB                ;                    ... PROCESS MSG SPLIT % ...
2646 16AB 88BE A         LD      AC2,ABPD3
2647 16AC 8204 A         LD      AC0,D4(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2648 16AD 2C45 A         JSR     @AEPBI2          ; CONVERT DATUM TO INTEGER IN AC1
2649 16AE 2114 A         JMP     EPP34            ; DATA VALIDITY ERROR
2650 16AF 8CC1 A         LD      AC3,AEPD3
2651 16B0 A704 A         ST      AC1,D4(AC3)      ; SAVE CONVERTED VALUE (%)
2652 16B1                ;
2653 16B1 80C4 A         LD      AC2,AEPCD3
2654 16B2 8201 A         LD      AC0,D1(AC2)      ; FETCH ADJUSTABLE TIME
2655 16B3 1B01 A         BOC     CCZN,.+2         ; TEST FOR POSITIVE
2656 16B4 2102 A         JMP     .+3
2657 16B5                ;
2658 16B5 4D00 A         LI      AC1,C0           ; STORE 0 FOR BOTH ADJ. INTS.
2659 16B6 2106 A         JMP     .+7
2660 16B7                ;
2661 16B7 4C00 A         LI      AC0,C0           ; PREPARE FOR MULTIPLY
2662 16B8 0680 A         MPY     D1(AC2)          ; MSG(%) * ADJ. TIME (0.1 SEC)
     16B9 0001 A
2663 16BA 88CB A         LD      AC2,AE100        ; DIVIDE BY 100
2664 16BB 0690 A         DIV     D0(AC2)
     16BC 0000 A
2665 16BD                ;
2666 16BD 88C4 A         LD      AC2,AEPCD3
2667 16BE A600 A         ST      AC1,D0(AC2)      ; STORE ADJ. INTERVAL 1
2668 16BF 5101 A         CAI     AC1,C1           ; SUBTRACT ADJ. INT. 1 FROM TOTAL
2669 16C0 C601 A         ADD     AC1,D1(AC2)
2670 16C1 A601 A         ST      AC1,D1(AC2)      ; STORE ADJ. INT. 2
2671 16C2 2105 A         JMP     .+6
2672 16C3                ;
2673 16C3                ;                    ... RECORD MSG DATA VALIDITY ERROR ...
2674 16C3 8CD3 A EPP34:  LD      AC3,AEPEF3       ; BASE ADDRESS OF ERROR BUFFER
2675 16C4 2C4E A         JSR     @AERE5           ; AC1 = ERROR DATUM
2676 16C5 4C01 A         LI      AC0,C1
2677 16C6 B0CF A         ST      AC0,@AEP3E       ; SET ERROR FLAG FOR PLAN 3
2678 16C7 B0D0 A         ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
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```
2679 16C8          ;
2680 16C8          ;                    ... PROCESS INT1 ...
2681 16C8 88BE A           LD      AC2,ABPD3
2682 16C9 8205 A           LD      AC0,D5(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2683 16CA 2C46 A           JSR     @AEPBI3          ; CONVERT DATUM TO INTEGER IN AC1
2684 16CB 210E A           JMP     EPP35            ; DATA VALIDITY ERROR
2685 16CC 8CC1 A           LD      AC3,AEPD3
2686 16CD A705 A           ST      AC1,D5(AC3)      ; SAVE CONVERTED VALUE (SECONDS)
2687 16CE 88CA A           LD      AC2,AEPIN1
2688 16CF E600 A           SKG     AC1,D0(AC2)      ; SKIP IF INT1 .GT. LIMIT
2689 16D0 2105 A           JMP     .+6
2690 16D1          ;
2691 16D1          ;                    ... RECORD INT1 INPUT ERROR ...
2692 16D1 8CD3 A           LD      AC3,AEPEF3       ; BASE ADDRESS OF ERROR BUFFER
2693 16D2 2C55 A           JSR     @AERE12          ; AC1 = ERROR DATUM
2694 16D3 4C01 A           LI      AC0,C1
2695 16D4 B0CF A           ST      AC0,@AEP3E       ; SET ERROR FLAG FOR PLAN 3
2696 16D5 94CA A           LD      AC1,@AEPIN1      ; SET MAXIMUM EXTENSION TO LIMIT (SEC)
2697 16D6          ;
2698 16D6 2C47 A           JSR     @AEM10           ; MULTIPLY AC1 BY 10
2699 16D7 8CC4 A           LD      AC3,AEPCD3
2700 16D8 A702 A           ST      AC1,D2(AC3)      ; STORE MAXIMUM EXTENSION (0.1 SEC)
2701 16D9 2105 A           JMP     .+6
2702 16DA          ;
2703 16DA          ;                    ... RECORD INT1 DATA VALIDITY ERROR ...
2704 16DA 8CD3 A EPP35:    LD      AC3,AEPEF3       ; BASE ADDRESS OF ERROR BUFFER
2705 16DB 2C4F A           JSR     @AERE6           ; AC1 = ERROR DATUM
2706 16DC 4C01 A           LI      AC0,C1
2707 16DD B0CF A           ST      AC0,@AEP3E       ; SET ERROR FLAG FOR PLAN 3
2708 16DE B0D0 A           ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
2709 16DF          ;
2710 16DF 0200 A           RTS     D0               ; RETURN FROM EPP3
2711 16E0          ;
```

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2714 16E0                .LIST   LPP
2715 16F0                ;
2716 16E0                ;                  ••• UPDATE PROG. PANEL DATA •••
2717 16E0                EPUP:
2718 16E0                ;                  ••• UPDATE ADJUSTABLE INTERVALS •••
2719 16E0                ;
2720 16E0                ;                                  DIAL 1
2721 16E0 9893 A         LD      AC2,@ATAI1                ; FIRST ADJUSTABLE INTERVAL
2722 16E1 C88B A         ADD     AC2,ATPM1
2723 16E2 8CC2 A         LD      AC3,AEPCD1
2724 16E3 8700 A         LD      AC1,D0(AC3)
2725 16E4 A600 A         ST      AC1,(AC2)
2726 16E5                ;
2727 16E5 9894 A         LD      AC2,@ATAI2                ; SECOND ADJUSTABLE INTERVAL
2728 16E6 C88B A         ADD     AC2,ATPM1
2729 16E7 8701 A         LD      AC1,D1(AC3)
2730 16E8 A600 A         ST      AC1,(AC2)
2731 16E9                ;                                  DIAL 2
2732 16E9 9893 A         LD      AC2,@ATAI1                ; FIRST ADJUSTABLE INTERVAL
2733 16EA C88C A         ADD     AC2,ATPM2
2734 16EB 8CC3 A         LD      AC3,AEPCD2
2735 16EC 8700 A         LD      AC1,D0(AC3)
2736 16ED A600 A         ST      AC1,(AC2)
2737 16EE                ;
2738 16EE 9894 A         LD      AC2,@ATAI2                ; SECOND ADJUSTABLE INTERVAL
2739 16EF C88C A         ADD     AC2,ATPM2
2740 16F0 8701 A         LD      AC1,D1(AC3)
2741 16F1 A600 A         ST      AC1,(AC2)
2742 16F2                ;                                  DIAL 3
2743 16F2 9893 A         LD      AC2,@ATAI1                ; FIRST ADJUSTABLE INTERVAL
2744 16F3 C88D A         ADD     AC2,ATPM3
2745 16F4 8CC4 A         LD      AC3,AEPCD3
2746 16F5 8700 A         LD      AC1,D0(AC3)
2747 16F6 A600 A         ST      AC1,(AC2)
2748 16F7                ;
2749 16F7 9894 A         LD      AC2,@ATAI2                ; SECOND ADJUSTABLE INTERVAL
2750 16F8 C88D A         ADD     AC2,ATPM3
2751 16F9 8701 A         LD      AC1,D1(AC3)
2752 16FA A600 A         ST      AC1,(AC2)
2753 16FB                ;
2754 16FB                ;                  ••• UPDATE MSG SYNCH DWELL PARAMETERS •••
2755 16FB 8C89 A         LD      AC3,ATDWL         ; ADDRESS OF MAX DWELL TIMES
2756 16FC 88C2 A         LD      AC2,AEPCD1        ; ADDRESS OF CONVERTED DATA FOR DIAL 1
2757 16FD 8608 A         LD      AC1,D8(AC2)
2758 16FE A700 A         ST      AC1,D0(AC3)
2759 16FF                ;
2760 16FF 88C3 A         LD      AC2,AEPCD2        ; ADDRESS OF CONVERTED DATA FOR DIAL 2
2761 1700 8608 A         LD      AC1,D8(AC2)
2762 1701 A701 A         ST      AC1,D1(AC3)
2763 1702                ;
2764 1702 88C4 A         LD      AC2,AEPCD3        ; ADDRESS OF CONVERTED DATA FOR DIAL 3
2765 1703 8608 A         LD      AC1,D8(AC2)
```

```
2766 1704 A702 A          ST      AC1,D2(AC3)
2767 1705          ;
2768 1705          ;                    ... UPDATE MAX EXTENSION PREEMPT PARAMETERS ...
2769 1705 88C2 A          LD      AC2,AEPCD1          ; DIAL 1
2770 1706 8602 A          LD      AC1,D2(AC2)
2771 1707 8C76 A          LD      AC3,APEMAX
2772 1708 A701 A          ST      AC1,D1(AC3)
2773 1709          ;
2774 1709 88C3 A          LD      AC2,AEPCD2          ; DIAL 2
2775 170A 8602 A          LD      AC1,D2(AC2)
2776 170B A702 A          ST      AC1,D2(AC3)
2777 170C          ;
2778 170C 88C4 A          LD      AC2,AEPCD3          ; DIAL 3
2779 170D 8602 A          LD      AC1,D2(AC2)
2780 170E A703 A          ST      AC1,D3(AC3)
2781 170F          ;
2782 170F          ;                    ... UPDATE SYNCHRONIZATION PARAMETERS ...
2783 170F 88A1 A          LD      AC2,AESYD
2784 1710 8CC2 A          LD      AC3,AEPCD1          ; DIAL 1
2785 1711 2908 A          JSR     EPUPS
2786 1712          ;
2787 1712 4006 A          LI      AC1,C6              ; BUFFER LENGTH = 6
2788 1713 3600 A          RADD    AC1,AC2             ; INCREMENT ADDRESS BY BUFFER LENGTH
2789 1714 8CC3 A          LD      AC3,AEPCD2          ; DIAL 2
2790 1715 2904 A          JSR     EPUPS
2791 1716          ;
2792 1716 3600 A          RADD    AC1,AC2             ; INCREMENT ADDRESS BY BUFFER LENGTH
2793 1717 8CC4 A          LD      AC3,AEPCD3          ; DIAL 3
2794 1718 2901 A          JSR     EPUPS
2795 1719          ;
2796 1719 0200 A          RTS     D0                  ; RETURN FROM EPUP
2797 171A          ;
2798 171A          ;                                   COPY SYNC DATA ROUTINE
2799 171A 8303 A EPUPS:   LD      AC0,D3(AC3)
2800 171B A200 A          ST      AC0,D0(AC2)         ; CYCLE LENGTH (0.1 SEC UNITS)
2801 171C A205 A          ST      AC0,D5(AC2)         ; SET SYNCH DIAL TIMER TO CYCLE LENGTH
2802 171D          ;
2803 171D 8304 A          LD      AC0,D4(AC3)
2804 171E A201 A          ST      AC0,D1(AC2)         ; RESET 1 (0.1 SEC UNITS)
2805 171F          ;
2806 171F 8305 A          LD      AC0,D5(AC3)
2807 1720 A202 A          ST      AC0,D2(AC2)         ; RESET 2 (0.1 SEC UNITS)
2808 1721          ;
2809 1721 8306 A          LD      AC0,D6(AC3)
2810 1722 A203 A          ST      AC0,D3(AC2)         ; RESET 3 (0.1 SEC UNITS)
2811 1723          ;
2812 1723 8307 A          LD      AC0,D7(AC3)
2813 1724 A204 A          ST      AC0,D4(AC2)         ; START PULSE DURATION (0.1 SEC UNITS)
2814 1725          ;
2815 1725 0200 A          RTS     D0                  ; RETURN FROM EPUPS
2816 1726          ;
```

```
1726                    .LIST   LPP
1726            ;                   ... CONVERT BINARY CODED DATA TO INTEGER ...
1726            ;                AT ENTRY, AC0 CONTAINS BINARY CODED DIGITS
1726            ;                ENTRY POINT:
1726            ;                        EPBI3 - AC0 HAS 0,N2,N1,N0
1726            ;                        EPBI2 - AC0 HAS 0, 0,N1,N0
1726            ;                        EPBI1 - AC0 HAS 0, 0, 0,N0
1726            ;                INTEGER VALUE RETURNED IN AC1
1726            EPBI:
1726            ;
1726 4E00 A EPBI3:  LI      AC2,C0
1727 3181 A         RCPY    AC0,AC1                 ; PROCESS THIRD DIGIT (N2)
1728 651E A         AND     AC1,H0F00               ; EXTRACT THIRD DIGIT N2*256
1729 E520 A         SKG     AC1,H0900       ; TEST FOR VALID DIGIT
172A 2101 A         JMP     .+2
172B 211A A         JMP     EPBIR+1         ; ERROR EXIT
172C 5DFE A         SHR     AC1,D2
172D 3600 A         RADD    AC1,AC2                 ; AC2 = AC2 + N2*64
172E 5DFF A         SHR     AC1,D1
172F 3600 A         RADD    AC1,AC2                 ; AC2 = AC2 + N2*(64 + 32)
1730 5DFD A         SHR     AC1,D3
1731 3600 A         RADD    AC1,AC2                 ; AC2 = AC2 + N2*100
1732 2101 A         JMP     .+2
1733 4E00 A EPBI2:  LI      AC2,C0
1734 3181 A         RCPY    AC0,AC1                 ; PROCESS SECOND DIGIT (N1)
1735 6512 A         AND     AC1,H00F0               ; EXTRACT SECOND DIGIT N1*16
1736 E514 A         SKG     AC1,H0090       ; TEST FOR VALID DIGIT
1737 2101 A         JMP     .+2
1738 210D A         JMP     EPBIR+1         ; ERROR EXIT
1739 5DFF A         SHR     AC1,D1
173A 3600 A         RADD    AC1,AC2                 ; AC2 = AC2 + N1*8
173B 5DFE A         SHR     AC1,D2
173C 3600 A         RADD    AC1,AC2                 ; AC2 = AC2 + N1*10
173D 2101 A         JMP     .+2
173E 4E00 A EPBI1:  LI      AC2,C0
173F 3181 A         RCPY    AC0,AC1                 ; PROCESS FIRST DIGIT (N0)
1740 6508 A         AND     AC1,H000F               ; EXTRACT FIRST DIGIT N0*1
1741 E50A A         SKG     AC1,H0009       ; TEST FOR VALID DIGIT
1742 2101 A         JMP     .+2
1743 2102 A         JMP     EPBIR+1         ; ERROR EXIT
1744 3900 A         RADD    AC2,AC1                 ; AC1 = AC2 + N0, FINAL INTEGER
1745            ;
1745 0201 A EPBIR:  RTS     D1              ; RETURN FROM EPBI
1746 0200 A         RTS     D0              ; ERROR RETURN FROM EPBI
1747            ;
1747            ;                   ... LOCAL DATA ...
1747 0F00 A H0F00:  .WORD   X'0F00
1748 00F0 A H00F0:  .WORD   X'00F0
1749 000F A H000F:  .WORD   X'000F
174A 0900 A H0900:  .WORD   X'0900          ; MAX VALUE FOR N2*256
174B 0090 A H0090:  .WORD   X'0090          ; MAX VALUE FOR N1*16
174C 0009 A H0009:  .WORD   X'0009          ; MAX VALUE FOR N0*1
```

EXECUTIVE CPC - CONVERT BINARY-CODED DATA TO INTEGER

```
2871 174D      ;
```

```
174D                    .LIST   LPP
174D            ;
174D            ;
174D            ;
174D            ;                   ... ROUTINES TO MULTIPLY AN INTEGER BY A CONSTANT ...
174D            ;
174D            ;                           UPON ENTRY, AC1 CONTAINS THE INTEGER
174D            ;                                       AC0 USED FOR TEMPORARY STORAGE
174D            ;
174D            ;                           UPON RETURN, AC1 CONTAINS RESULT
174D            ;
174D            ;                   ... MULTIPLY BY 10 ...
174D            EM10:
174D 5D01 A             SHL     AC1,D1          ; INTEGER*2
174E 3481 A             RCPY    AC1,AC0         ; SAVE
174F 5D02 A             SHL     AC1,D2          ; INTEGER*8
1750 3100 A             RADD    AC0,AC1         ; INTEGER*10
1751 0200 A             RTS     D0              ; RETURN FROM EM10
1752            ;
1752            ;                   ... MULTIPLY BY 24 ...
1752            EM24:
1752 5D03 A             SHL     AC1,D3          ; INTEGER*8
1753 3481 A             RCPY    AC1,AC0         ; SAVE
1754 5D01 A             SHL     AC1,D1          ; INTEGER*16
1755 3100 A             RADD    AC0,AC1         ; INTEGER*24
1756 0200 A             RTS     D0              ; RETURN FROM EM24
```

```
2900 1757                .PAGE
2901 1757                .ASECT
2902 1757 1800 A         .=X'1800
2903 1800                ;
```

```
1800                    .LIST   LTP
1800            ;*****************************************************************************
1800            ;
1800            TPEX:
1800 2100 A             JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
1801 9484 A             LD      AC1,@ATIN               ; AC1=CURRENT INTERVAL INDEX
1802 8892 A             LD      AC2,ATHI                ;  AC2=LOC OF THI
1803 F600 A             SKNE    AC1,(AC2)               ;SKIP IF NOT TRANSFER/HOLD INTERVAL
1804 2101 A             JMP     .+2
1805 2108 A             JMP     TMSG
1806 9069 A             LD      AC0,@ABDIN              ; AC0 = BDIN
1807 075E A             SKBIT   D14                     ; SKIP IF TRANSFER HOLD
1808 2105 A             JMP     TMSG
1809 8C97 A             LD      AC3,ATCIW               ; AC3=LOC OF COMMAND INDEX WORD TABLE
180A CE00 A             ADD     AC3,(AC2)               ; AC3=LOC OF CIW FOR T/H INTERVAL
180B 8300 A             LD      AC0,(AC3)               ; AC0=CIW FOR T/H INTERVAL
180C B082 A             ST      AC0,@ATCIWC             ; TCIWC=AC0
180D 0200 A             RTS     D0                  ; RETURN FROM TPEX (WAIT MODE)
180E F51E A TMSG:       SKNE    AC1,T0                  ; SKIP IF NOT MSG
180F 2908 A             JSR     TSST                    ; JUMP TO TP SYNC START ROUTINE
1810 2101 A             JMP     .+2                     ; JUMP OVER RTS FOR TIMING MODE
1811 0200 A             RTS     D0                  ; RETURN FROM TPEX (SYNCH DWELL MODE)
1812 9C85 A             LD      AC3,@ATINT              ;  AC2=LOC OF INTERVAL TIMER
1813 DD1A A             SUB     AC3,T1                  ;  DECREMENT INTERVAL TIMER
1814 BC85 A             ST      AC3,@ATINT
1815 ED17 A             SKG     AC3,T0                  ;  SKIP IF INTERVAL NOT DONE
1816 291A A             JSR     TNXT                    ; INITIATE NEXT TP INTERVAL
1817 0200 A             RTS     D0                  ; RETURN FROM TPEX (TIMING MODE)
1818            ;
```

```
2937 1818                .LIST   LTP
2938 1818          ;*****************************************************************************
2939 1818          ;
2940 1818          TSST:
2941 1818 2100 A           JMP     .+1                 ; JSR @ACOTF CAN BE INSERTED HERE
2942 1819 9C86 A           LD      AC3,@ATFST          ;  AC3=VALUE OF WAIT FOR SYNC START FLAG
2943 181A ED12 A           SKG     AC3,T0              ; SKIP IF WAIT FOR SYNC START FLAG IS SET
2944 181B 210D A           JMP     TRSET
2945 181C 8889 A           LD      AC2,ATDWL           ; BASE ADDRESS FOR DWELL TIME MAXIMUMS
2946 181D 9483 A           LD      AC1,@ATCDS          ; CURRENT DIAL SELECTION
2947 181E 49FF A           AISZ    AC1,CM1             ; COMPUTE ADDRESS FOR CURRENT DIAL
2948 181F 3600 A           RADD    AC1,AC2             ; SKIP IF DIAL 1
2949 1820 8E00 A           LD      AC3,(AC2)           ; MAX DWELL TIME
2950 1821          ;
2951 1821          ;
2952 1821 889C A           LD      AC2,AETST           ; AC2=LOC OF DWELL TIMER
2953 1822 EE00 A           SKG     AC3,(AC2)           ; SKIP IF DWELL TIMER < DWELL MAX
2954 1823 2105 A           JMP     TRSET               ; JUMP TO RESET WAIT FOR SYNC.START FLAG
2955 1824 4001 A           LI      AC1,C1
2956 1825 889D A           LD      AC2,AEPST           ; AC2=LOC OF START PULSE INDICATOR
2957 1826 4C00 A           LI      AC0,C0
2958 1827 F200 A           SKNE    AC0,(AC2)           ; SKIP IF START PULSE PRESENT
2959 1828 0201 A           RTS     D1              ; RETURN FROM TSST (SYNCH DWELL MODE)
2960 1829 9086 A TRSET:    LD      AC0,@ATFST
2961 182A 072F A           SETBIT  D15                 ; SET MSG RELEASE BIT
2962 182B B086 A           ST      AC0,@ATFST
2963 182C 0200 A           RTS     D0              ; RETURN FROM TSST (TIMING MODE)
2964 182D                                          ;  LOCAL CONSTANTS
2965 182D 0000 A T0:       .WORD   0
2966 182E 0001 A T1:       .WORD   1
2967 182F 0002 A T2:       .WORD   2
2968 1830 0003 A T3:       .WORD   3
2969 1831          ;
```

```
1831                    .LIST   LTP
1831            ;*****************************************************************************
1831            ;
1831            TNXT:
1831 2100 A             JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
1832 4D01 A             LI      AC1,C1
1833 8884 A             LD      AC2,ATIN                ; AC2= LOC OF CURRENT INTERVAL INDEX
1834 C600 A             ADD     AC1,(AC2)
1835 B484 A             ST      AC1,@ATIN               ; INCREMENT INTERVAL INDEX(TIN)
1836 4C00 A             LI      AC0,C0
1837 E200 A             SKG     AC0,(AC2)               ; SKIP IF TIN<0
1838 2101 A             JMP     .+2
1839 211F A             JMP     TOL                     ; TIN < 0
183A 8C95 A             LD      AC3,ATIMX               ; AC3=LOC OF MAX VALUE FOR TIN
183B E700 A             SKG     AC1,(AC3)               ; SKIP IF TIN>MAX
183C 2101 A             JMP     .+2
183D 211B A             JMP     TOL                     ; TIN > TIMX
183E 8C8F A             LD      AC3,ATCTP               ; AC3=LOC OF CURRENT TIMING PLAN
183F CE00 A             ADD     AC3,(AC2)               ; AC3=LOC OF CURRENT INTERVAL IN TP
1840 8300 A             LD      AC0,(AC3)               ; AC0=CURRENT INTERVAL LENGTH
1841 1102 A             BOC     CCEZ,TEZ                ; BRANCH IF INTERVAL IS 0
1842 1B0A A             BOC     CCZN,TLZ                ; BRANCH IF INTERVAL < 0
1843 210E A             JMP     TGZ                     ; INTERVAL >0
1844 8C92 A TEZ:        LD      AC3,ATHI                ; AC3=LOC OF TRANSFER HOLD INDEX
1845 F700 A             SKNE    AC1,(AC3)               ; SKIP IF NOT T H INTERVAL
1846 2101 A             JMP     .+2
1847 21E9 A             JMP     TNXT                ; CURRENT INTERVAL  IS 0 AND NOT TRANSFER
1848                                                ; HOLD--JUMP TO NEXT INTERVAL
1848 9069 A             LD      AC0,@ABDIN              ; AC0=BDIN
1849 075E A             SKBIT   D14                     ; SKIP IF TRANSFER HOLD
184A 21E6 A             JMP     TNXT                    ; NO TRANSFER HOLD, SKIP TO NEXT INTERVAL
184B 8300 A             LD      AC0,(AC3)               ; AC0=CURRENT INTERVAL LENGTH
184C 2105 A             JMP     TGZ                     ; TRANSFER HOLD, TREAT AS FINITE INTERVAL
184D                                                ; TINT<0 SIGNALS END OF CYCLE
184D 4D00 A TLZ:        LI      AC1,C0
184E B484 A             ST      AC1,@ATIN               ; SET INTERVAL INDEX TO 0
184F 2C2C A             JSR     @AEEOC                  ; JUMP TO END OF CYCLE ROUTINE
1850 8C8F A             LD      AC3,ATCTP               ; AC3=LOC OF CURRENT TP
1851 8300 A             LD      AC0,(AC3)               ; AC0=LENGTH OF FIRST INTERVAL
1852 B085 A TGZ:        ST      AC0,@ATINT              ; INITIALIZE CURRENT INTERVAL TIMER
1853 8897 A             LD      AC2,ATCIW               ; AC2=LOC OF COMMAND INDEX WORD TABLE
1854 9C84 A             LD      AC3,@ATIN               ; AC3=VALUE OF CURRENT INT INDEX
1855 3E00 A             RADD    AC3,AC2                 ; AC2=LOC OF CURRENT COMMAND INDEX WORD
1856 8200 A             LD      AC0,(AC2)               ; AC0=VALUE OF COMMAND INDEX WORD
1857 B082 A             ST      AC0,@ATCIWC             ;TCIWC=VALUE OF COMMAND INDEX WORD
1858 0200 A             RTS     D0                  ; RETURN FROM TNXT
1859            TOL:                                ; INTERVAL INDEX OUT OF LIMITS, RECORD ERROR
1859                                                ;     AND DISCONNECT
1859 8890 A             LD      AC2,ATERR
185A 9084 A             LD      AC0,@ATIN
185B A204 A             ST      AC0,D4(AC2)             ; STORE ERROR WORD IN ERROR BUFFER
185C 8203 A             LD      AC0,D3(AC2)
```

TIMING PLAN CPC - INITIATE NEXT INTERVAL

```
3024 185D 4801 A          AISZ    AC0,C1              ; FETCH ERROR COUNTER AND INCREMENT
3025 185E 2100 A          JMP     .+1
3026 185F A203 A          ST      AC0,D3(AC2)
3027 1860 8200 A          LD      AC0,D0(AC2)
3028 1861 0721 A          SETBIT  D1                  ; SET ERROR FLAG BIT 1
3029 1862 A200 A          ST      AC0,D0(AC2)
3030 1863          ;
3031 1863 2C2F A          JSR     @AEADC          ; AUTODISCONNECT ROUTINE, NO RETURN
3032 1864          ;
3033 1864 2100 A          JMP     .+1             ; THIS INST SHOULD NEVER BE REACHED
3034 1865 21FE A          JMP     .-1
3035 1866          ;
```

```
1866                    .LIST   LTP
1866            ;*****************************************************************************
1866            ;
1866            TNCY:
1866            ;                                       ZERO PREQ AND PTER ENTRY TIMES
1866 4C00 A             LI      AC0,C0
1867 88BA A             LD      AC2,ACTST
1868 A200 A             ST      AC0,D0(AC2)
1869 A201 A             ST      AC0,D1(AC2)
186A            ;
186A            ;                                       TEST PREEMPT IN PROGRESS FLAG
186A 906E A             LD      AC0,@APIP                   ; ACCESS PREEMPT IN PROGRESS FLAG
186B 1554 A             BOC     CCNZ,TNDC                   ; BRANCH IF PREEMPT IN PROGRESS
186C                                                        ;    NO DIAL CHANGE PERMITTED
186C            ;
186C            ;                       ... MANUAL OVERRIDE TEST ...
186C 90BB A             LD      AC0,@ABPPD          ; PROG PANEL SWITCHES
186D 075B A             SKBIT   D11                 ; SKIP IF MANUAL OVERRIDE IS ON
186E 2101 A             JMP     .+2                 ; MANUAL OVERRIDE OFF
186F 2116 A             JMP     TSYNCR
1870            ;
1870            ;                       ... PROG PANEL SYNCHRONIZATION SWITCHES ...
1870 8883 A     TSYNC:  LD      AC2,ATCDS           ; ADDRESS OF CURRENT DIAL SELECT DATUM
1871            ;
1871 4D01 A             LI      AC1,C1
1872 F600 A             SKNE    AC1,(AC2)           ; SKIP IF NOT DIAL 1
1873 2101 A             JMP     .+2
1874 2103 A             JMP     TSD2                ; JUMP TO TEST DIAL 2
1875 0751 A             SKBIT   D1                  ; SKIP IF SYNCH SWITCH IS ON
1876 210F A             JMP     TSYNCR              ; JUMP TO RESET FLAG
1877 2110 A             JMP     TSYNCE
1878            ;
1878 4D02 A     TSD2:   LI      AC1,C2
1879 F600 A             SKNE    AC1,(AC2)           ; SKIP IF NOT DIAL 2
187A 2101 A             JMP     .+2
187B 2103 A             JMP     TSD3                ; JUMP TO TEST DIAL 3
187C 0755 A             SKBIT   D5                  ; SKIP IF SYNCH SWITCH IS ON
187D 2108 A             JMP     TSYNCR              ; JUMP TO RESET FLAG
187E 2109 A             JMP     TSYNCE
187F            ;
187F 4D03 A     TSD3:   LI      AC1,C3
1880 F600 A             SKNE    AC1,(AC2)           ; SKIP IF NOT DIAL 3
1881 2101 A             JMP     .+2
1882 2105 A             JMP     TSYNCE
1883 0759 A             SKBIT   D9                  ; SKIP IF SYNCH SWITCH IS ON
1884 2101 A             JMP     TSYNCR              ; JUMP TO RESET FLAG
1885 2102 A             JMP     TSYNCE
1886            ;
1886 4C00 A     TSYNCR: LI      AC0,C0
1887 B086 A             ST      AC0,@ATFST          ; RESET 'WAIT FOR SYNCH START' FLAG
1888            ;
1888            TSYNCE:
```

```
TIMING PLAN CPC - INITIATE NEXT CYCLE

3090 1888 906E A          LD      AC0,@APIP       ;FETCH PREEMPT IN PROGRESS FLAG
3091 1889 150C A          BOC     CCNZ,TPUE       ; BRANCH IF FLAG SET
3092 188A 90C6 A          LD      AC0,@AEPUF      ; FETCH PROG PANEL UPDATE FLAG
3093 188B 1501 A          BOC     CCNZ,.+2        ; BRANCH IF UPDATE FLAG IS SET
3094 188C 2109 A          JMP     TPUE
3095 188D                 ;
3096 188D 2C44 A          JSR     @AEPUP          ;UPDATE PROG. PANEL DATA
3097 188E                 ;
3098 188E 8CE9 A          LD      AC3,APPDU
3099 188F 2C57 A          JSR     @AXLOF1         ; ASSURE PENDING INPUT LIGHT IS OFF
3100 1890 4C00 A          LI      AC0,C0
3101 1891 80C6 A          ST      AC0,@AEPUF      ; RESET PROG PANEL UPDATE FLAG
3102 1892                 ;
3103 1892 4C00 A          LI      AC0,C0
3104 1893 8086 A          ST      AC0,@ATFST      ; RESET 'WAIT FOR SYNCH START' FLAG
3105 1894                 ;
3106 1894 9483 A          LD      AC1,@ATCDS      ; TREAT PANEL UPDATE AS A DIAL CHANGE
3107 1895 211E A          JMP     TDCH
3108 1896           TPUE:
3109 1896                 ;
3110 1896                                         ; DETERMINE CURRENT DIAL SELECTION
3111 1896 90A4 A TDIAL:   LD      AC0,@AED23
3112 1897 0754 A          SKBIT   D4
3113 1898 2113 A          JMP     TND2                    ; NOT DIAL 2
3114 1899 0755 A          SKBIT   D5
3115 189A 210F A          JMP     TD2                     ; SELECT DIAL 2
3116 189B                 ;                       DIAL SELECT ERROR
3117 189B 889C A          LD      AC2,ATERR               ; IF BOTH BITS 4 AND 5 ARE SET, RECORD
3118 189C                                                 ; ERROR
3119 189C A202 A          ST      AC0,D2(AC2)             ; STORE IN ERROR BUFFER TERR0
3120 189D 8201 A          LD      AC0,D1(AC2)             ; FETCH ERROR COUNTER AND INCREMENT
3121 189E 4801 A          AISZ    AC0,C1
3122 189F 2100 A          JMP     .+1
3123 18A0 A201 A          ST      AC0,D1(AC2)
3124 18A1 8200 A          LD      AC0,D0(AC2)
3125 18A2 0720 A          SETBIT  D0                      ; SET ERROR FLAG BIT 0
3126 18A3 A200 A          ST      AC0,D0(AC2)
3127 18A4 9483 A          LD      AC1,@ATCDS              ; IN CASE OF ERROR, RETAIN CURRENT DIAL
3128 18A5 E588 A          SKG     AC1,T1                  ; SKIP IF NOT DIAL 1
3129 18A6 2109 A          JMP     TD1
3130 18A7 E587 A          SKG     AC1,T2                  ; SKIP IF DIAL 3
3131 18A8 2101 A          JMP     TD2
3132 18A9 2104 A          JMP     TD3
3133 18AA 4D02 A TD2:     LI      AC1,C2                  ; SELECT DIAL 2
3134 18AB 2105 A          JMP     TDSEL
3135 18AC 0755 A TND2:    SKBIT   D5                      ; SKIP IF DIAL 3
3136 18AD 2102 A          JMP     TD1
3137 18AE 4D03 A TD3:     LI      AC1,C3                  ; SELECT DIAL 3
3138 18AF 2101 A          JMP     TDSEL
3139 18B0 4D01 A TD1:     LI      AC1,C1                  ; SELECT DIAL 1
3140 18B1                 ;
3141 18B1           TDSEL:
```

TIMING PLAN CPC - INITIATE NEXT CYCLE

```
3142 18B1 8C83 A        LD      AC3,ATCDS       ; AC3=IOC OF CURRENT DIAL SELECTOR
3143 18B2 F700 A        SKNE    AC1,(AC3)       ; SKIP IF NEW DIAL SELECTION
3144 18B3 210C A        JMP     TNDC            ; JUMP NO DIAL CHANGE
3145 18B4               ;                       DIAL CHANGE
3146 18B4 B483 A TDCH:  ST      AC1,@ATCDS      ; CHANGE CURRENT DIAL SELECTOR
3147 18B5 9C83 A        LD      AC3,@ATCDS      ; UPDATED DIAL SELECTION (1, 2, OR 3)
3148 18B6 CC8A A        ADD     AC3,ATPP        ; ADDRESS PRECEDING POINTERS
3149 18B7 8800 A        LD      AC2,D0(AC3)     ; POINTER TO MASTER FOR CURRENT DIAL
3150 18B8 8C8F A        LD      AC3,ATCTP       ; AC3=IOC OF CURRENT TP TABLE
3151 18B9 2C36 A        JSR     @ATCOPY         ; COPY MASTER INTO CURRENT
3152 18BA 9C83 A        LD      AC3,@ATCDS      ; UPDATED DIAL SELECTION (1, 2, OR 3)
3153 18BB CC8A A        ADD     AC3,ATPP        ; ADDRESS PRECEDING POINTERS
3154 18BC 8800 A        LD      AC2,D0(AC3)     ; POINTER TO MASTER FOR CURRENT DIAL
3155 18BD 8C8E A        LD      AC3,ATNTP       ; AC3=IOC OF NEXT TP
3156 18BE 2C36 A        JSR     @ATCOPY         ;COPY MASTER TO NEXT
3157 18BF 0200 A        RTS     D0              ; RETURN FROM TNCY
3158 18C0               ;
3159 18C0               ;                       NO DIAL CHANGE
3160 18C0 8C8F A TNDC:  LD      AC3,ATCTP
3161 18C1 888E A        LD      AC2,ATNTP
3162 18C2 2C36 A        JSR     @ATCOPY         ; COPY NEXT TP INTO CURRENT TP
3163 18C3 9C83 A        LD      AC3,@ATCDS      ; UPDATED DIAL SELECTION (1, 2, OR 3)
3164 18C4 CC8A A        ADD     AC3,ATPP        ; ADDRESS PRECEDING POINTERS
3165 18C5 8800 A        LD      AC2,D0(AC3)     ; POINTER TO MASTER FOR CURRENT DIAL
3166 18C6 8C8E A        LD      AC3,ATNTP
3167 18C7 2C36 A        JSR     @ATCOPY         ;COPY MASTER TO NEXT
3168 18C8 0200 A        RTS     D0              ; RETURN FROM TNCY
3169 18C9               ;
```

```
18C9                    .LIST   LTP
18C9          ;*****************************************************************************
18C9          ;
18C9          ;                                   TCOPY COPIES ONE 20 ELEMENT ARRAY INTO
18C9          ;                                   ANOTHER 20 ELEMENT ARRAY
18C9          ;                                   AC3 PASSES THE LOCATION OF ARRAY TO BE
18C9          ;                                   CHANGED.  AC2 PASSES THE LOCATION OF
18C9          ;                                   THE ARRAY TO BE COPIED
18C9          ;*****************************************************************************
18C9 4DEC A TCOPY:  LI      AC1,CM20
18CA 8200 A TLOOP:  LD      AC0,(AC2)                ;VALUE OF THE OLD ARRAY
18CB A300 A         ST      AC0,(AC3)                ; LOC AC3 IN NEW TABLE = AC0
18CC 4901 A         AISZ    AC1,C1
18CD 2101 A         JMP     .+2
18CE 0200 A         RTS     D0                  ; RETURN FROM TCOPY
18CF 4A01 A         AISZ    AC2,C1
18D0 4B01 A         AISZ    AC3,C1
18D1 21F8 A         JMP     TLOOP
18D2 0200 A         RTS     D0                  ; RETURN FROM TCOPY
18D3          ;
```

```
3194 18D3                .LIST.  LTP
3195 18D3                ;
3196 18D3                ;                    ... T I M I N G   P L A N   T A B L E S ...
3197 18D3                ;
3198 18D3                ;                          (ALL DATA IN THIS LOCAL DATA BASE SHALL BE
3199 18D3                ;                           CONSIDERED AS APPLICATION DEPENDENT)
3200 18D3                ;
3201 18D3                ;                          PASSIVE BUS DETECTOR SYSTEM - PBD33J
3202 18D3                ;
3203 18D3                ;          (INTERVAL INDEX PARAMETERS ARE IN TERMS OF DISPLACEMENT FROM
3204 18D3                ;           THE BEGINNING OF THE TIMING PLAN INTERVAL TABLE, 0 - N)
3205 18D3                ;
3206 18D3 0006 A TSCI:   .WORD   6                ; INDEX OF SYNCH CONTRACTIBLE INTERVAL
3207 18D4 0004 A THI:    .WORD   4                ; INDEX OF TRANSFER/HOLD INTERVAL
3208 18D5 0001 A TAI1:   .WORD   1                ; INDEX OF ADJ INT 1 (MUST BE IN MSG)
3209 18D6 0006 A TAI2:   .WORD   6                ; INDEX OF ADJ INT 2
3210 18D7 000A A TIMX:   .WORD   10               ; MAXIMUM INTERVAL INDEX
3211 18D8                ;
3212 18D8                ;                    ... PARAMETERS FOR EACH DETECTORIZED APPROACH ...
3213 18D8                ;                          (MAXIMUM OF 16 APPROACHES)
3214 18D8                TECI:
3215 18D8                ;
3216 18D8                ;                                   33RD AND JOHNSON SOUTHBOUND APPROACH
3217 18D8                ;
3218 18D8 0006 A         .WORD   6                ; PRIMARY CONTRACTIBLE INTERVAL
3219 18D9 0001 A         .WORD   1                ; SECONDARY CONTRACTIBLE INTERVAL
3220 18DA 0003 A         .WORD   3                ; PRIMARY EXTENDIBLE INTERVAL
3221 18DB 0000 A         .WORD   0                ; MINIMUM CONTRACTIBLE INTERVAL LENGTH
3222 18DC                ;
3223 18DC                ;                                   33RD AND JOHNSON NORTHBOUND APPROACH
3224 18DC                ;
3225 18DC 0006 A         .WORD   6                ; PRIMARY CONTRACTIBLE INTERVAL
3226 18DD 0001 A         .WORD   1                ; SECONDARY CONTRACTIBLE INTERVAL
3227 18DE 0003 A         .WORD   3                ; PRIMARY EXTENDIBLE INTERVAL
3228 18DF 0000 A         .WORD   0                ; MINIMUM CONTRACTIBLE INTERVAL LENGTH
3229 18E0 1918 A         .=.+56
3230 1918                ;
3231 1918                ;                    ... SIGNAL DISPLAY COMMAND INDEX WORDS ...
3232 1918                ;                          (MAXIMUM OF 20 INTERVALS)
3233 1918                ;
3234 1918                ;                          (BITS 15 - 8, MAIN STREET COMMAND INDEX
3235 1918                ;                           BITS 7 - 0, CROSS STREET COMMAND INDEX)
3236 1918                TCIW:
3237 1918 0201 A         .WORD   X'0201           ; INTERVAL 0
3238 1919 0201 A         .WORD   X'0201           ; INTERVAL 1
3239 191A 0301 A         .WORD   X'0301           ; INTERVAL 2
3240 191B 0401 A         .WORD   X'0401           ; INTERVAL 3
3241 191C 0501 A         .WORD   X'0501           ; INTERVAL 4
3242 191D 0102 A         .WORD   X'0102           ; INTERVAL 5
3243 191F 0102 A         .WORD   X'0102           ; INTERVAL 6
3244 191F 0103 A         .WORD   X'0103           ; INTERVAL 7
3245 1920 0104 A         .WORD   X'0104           ; INTERVAL 8
```

```
3246 1921 0105 A          .WORD   X'0105          ; INTERVAL 9
3247 1922 192C A          .=.+10
3248 192C                 ;
3249 192C                 ;                  ... SKELETON TIMING PLAN TABLES ...
3250 192C                 ;                        ( ADJ INTS = 0)
3251 192C                 ;
3252 192C                 TPTAB:
3253 192C 0046 A          .WORD   70                      ; TPM1
3254 192D 0000 A          .WORD   0               ; ADJ INT 1
3255 192E 0050 A          .WORD   80
3256 192F 0000 A          .WORD   0
3257 1930 001E A          .WORD   30
3258 1931 0046 A          .WORD   70
3259 1932 0000 A          .WORD   0               ; ADJ INT 2
3260 1933 006E A          .WORD   110
3261 1934 0000 A          .WORD   0
3262 1935 001E A          .WORD   30
3263 1936 FFFF A          .WORD   -1
3264 1937 1940 A          .=.+9
3265 1940                 ;
3266 1940 0046 A          .WORD   70                      ; TPM2
3267 1941 0000 A          .WORD   0               ; ADJ INT 1
3268 1942 0050 A          .WORD   80
3269 1943 0000 A          .WORD   0
3270 1944 001E A          .WORD   30
3271 1945 0046 A          .WORD   70
3272 1946 0000 A          .WORD   0               ; ADJ INT 2
3273 1947 006E A          .WORD   110
3274 1948 0000 A          .WORD   0
3275 1949 001E A          .WORD   30
3276 194A FFFF A          .WORD   -1
3277 194B 1954 A          .=.+9
3278 1954                 ;
3279 1954 0046 A          .WORD   70                      ; TPM3
3280 1955 0000 A          .WORD   0               ; ADJ INT 1
3281 1956 0050 A          .WORD   80
3282 1957 0000 A          .WORD   0
3283 1958 001E A          .WORD   30
3284 1959 0046 A          .WORD   70
3285 195A 0000 A          .WORD   0               ; ADJ INT 2
3286 195B 006E A          .WORD   110
3287 195C 0000 A          .WORD   0
3288 195D 001E A          .WORD   30
3289 195E FFFF A          .WORD   -1
3290 195F 1967 A          .=.+8
3291 1967 1968 A TPE:     .=.+1                 ; TPE MUST BE LAST LOCATION IN TPM3
3292 1968                 ; END OF TP TABLES
```

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3293 1968                .PAGE
3294 1968                .ASECT
3295 1968 1A00 A         .=X'1A00
```

```
1A00                .LIST   LPR
1A00          ;
1A00          ;                 ... P R E E M P T   C P C ...
1A00          ;
1A00          ;                                  PREEMPT MONITOR
1A00          ;                                  MPLS FIELD TEST
1A00          PMON:
1A00 2100 A          JMP     .+1                ; DEBUG HALT MAY BE INSERTED HERE VIA COTF
1A01          ;
1A01 2100 A          JMP     .+1
1A02          ;
1A02          ;                                  DECREMENT TIMER FOR RECENT BUS
1A02          ;                                  CLASSIFICATION TO ZERO
1A02 907B A          LD      AC0,@AVCBT
1A03 1103 A          BOC     CCEZ,.+4
1A04 48FF A          AISZ    AC0,CM1
1A05 2100 A          JMP     .+1
1A06 B07B A          ST      AC0,@AVCBT
1A07          ;                                  DECREMENT MIN. DURATION FOR PREEMPT
1A07          ;                                  TIMER TO ZERO
1A07 9075 A          LD      AC0,@APMDT              ; LOAD TIMER
1A08 1104 A          BOC     CCEZ,PM01               ; BRANCH IF TIMER = 0
1A09 48FF A          AISZ    AC0,CM1                 ; DECREMENT COUNTER
1A0A 2100 A          JMP     .+1
1A0B B075 A          ST      AC0,@APMDT
1A0C 2107 A          JMP     PM02
1A0D          ;                                  MINIMUM DURATION TIMER = 0
1A0D 906E A PM01:    LD      AC0,@APIP
1A0E 1105 A          BOC     CCEZ,PM02               ; BRANCH IF PREEMPT NOT IN PROGRESS
1A0F                                                 ; PREEMPT IN PROGRESS
1A0F          ;                                  EXAMINE CLEARANCE DETECTOR FOR
1A0F          ;                                  PREEMPT APPROACH
1A0F B07E A          ST      AC0,@AVCDT
1A10 2C31 A          JSR     @AVCLAS                 ; CALL VEHICLE CLASSIFIER
1A11 1502 A          BOC     CCNZ,PM02               ; BRANCH IF VEHICLE NOT BUS
1A12 2C33 A          JSR     @APTER                  ; CALL PREEMPT TERMINATION
1A13 2100 A          JMP     .+1                ; DEBUG HALT MAY BE INSERTED HERE VIA COTF
1A14          ;
1A14          ;                                  CALL VEHICLE CLASSIFIER FOR ALL UPSTREAM
1A14          ;                                  (PREEMPT) DETECTORS
1A14          PM02:
1A14 4C01 A          LI      AC0,C1                  ; INITIALIZE DETECTOR INDEX
1A15          PM03:
1A15 B07E A          ST      AC0,@AVCDT
1A16 2C31 A          JSR     @AVCLAS                 ; CALL VEHICLE CLASSIFIER
1A17 1502 A          BOC     CCNZ,PM05               ; JUMP IF VEHICLE NON-BUS
1A18 2C32 A          JSR     @APREQ                  ; CALL PREEMPT REQUEST ROUTINE
1A19 2100 A          JMP     .+1                ; DEBUG HALT MAY BE INSERTED HERE VIA COTF
1A1A 907E A PM05:    LD      AC0,@AVCDT
1A1B 4802 A          AISZ    AC0,C2                  ; INCREMENT DETECTOR INDEX BY 2
1A1C          ;                                        (ODD INDICES)
1A1C 2100 A          JMP     .+1
```

```
3350 1A1D E116 A          SKG     AC0,PMHD            ; SKIP IF ALL UPSTREAM DETECTORS
3351 1A1E                 ;                             SIGNATURE BLOCKS HAVE BEEN EXAMINED
3352 1A1E 21F6 A          JMP     PM03
3353 1A1F                 ;                           CALL VEHICLE CLASSIFIER FOR ALL
3354 1A1F                 ;                           DOWNSTREAM (CLEARANCE) DETECTORS
3355 1A1F 4C02 A          LI      AC0,C2              ; INITIALIZE DETECTOR INDEX
3356 1A20                 PM04:
3357 1A20 B07E A          ST      AC0,@AVCDT
3358 1A21 2C31 A          JSR     @AVCLAS             ; CALL VEHICLE CLASSIFIER
3359 1A22 907E A          LD      AC0,@AVCDT
3360 1A23 4802 A          AISZ    AC0,C2              ; INCREMENT DETECTOR INDEX BY 2
3361 1A24                 ;                             (EVEN INDICES)
3362 1A24 2100 A          JMP     .+1
3363 1A25 E10E A          SKG     AC0,PMHD            ; SKIP IF ALL UPSTREAM DETECTORS
3364 1A26                 ;                             SIGNATURE BLOCKS HAVE BEEN EXAMINED
3365 1A26 21F9 A          JMP     PM04
3366 1A27                 ;                           TERMINATION OF PREEMPT AT END OF
3367 1A27                 ;                           EXTENDED INTERVAL
3368 1A27 906E A          LD      AC0,@APIP
3369 1A28 110A A          BOC     CCEZ,PMRET          ; IF PREEMPT NOT IN PROGRESS, RETURN.
3370 1A29 9073 A          LD      AC0,@APMIF
3371 1A2A 1101 A          BOC     CCEZ,.+2
3372 1A2B 1307 A          BOC     CCZN,PMRET          ; IF EI IS IN NEXT CYCLE,RETURN.
3373 1A2C 9084 A          LD      AC0,@ATIN           ; AC0 = CURRENT INTERVAL INDEX
3374 1A2D 8073 A          LD      AC2,APMIF           ; AC2 = POINTER TO PMIF ARRAY
3375 1A2E E200 A          SKG     AC0,D0(AC2)         ; SKIP IF CURRENT INTERVAL INDEX
3376 1A2F                                             ; > INTERVAL INDEX SPECIFIED BY PMIF
3377 1A2F 2103 A          JMP     PMRET
3378 1A30 4C00 A          LI      AC0,C0
3379 1A31 8073 A          ST      AC0,@APMIF
3380 1A32 B06E A          ST      AC0,@APIP           ; RESET PIP FLAG
3381 1A33 0200 A PMRET:   RTS     D0
3382 1A34                 ;
3383 1A34                 ;                           LOCAL DATA
3384 1A34 0004 A PMHD:    .WORD   DETS
```

```
3387 1A35                .LIST  LPR
3386 1A35          PSWCH:
3389 1A35          ;                                   DEBOUNCE SDU DETECTOR SWITCHES
3390 1A35          ;
3391 1A35          ;                                   CHECKOUT ROUTINE FOR INTERFACE
3392 1A35          ;                                   BETWEEN LAB INTERSECTION MODEL AND
3393 1A35          ;                                   VEHICLE SIGNATURE DATA
3394 1A35          ;
3395 1A35 9068 A           LD      AC0,@ABBUF              ; AC0 = DDIN
3396 1A36 8880 A           LD      AC2,AVCSDB
3397 1A37          ;                                   DEBOUNCE DOWNSTREAM SWITCH
3398 1A37 075C A           SKBIT   D12                     ; SKIP IF DOWNSTREAM SWITCH UNACTIVATED
3399 1A38 2103 A           JMP     .+4
3400 1A39          ;                                   SWITCH IS UNACTIVATED
3401 1A39 4000 A           LI      AC1,C0
3402 1A3A A511 A           ST      AC1,PSWFC               ; CLEAR FLAG
3403 1A3B 2105 A           JMP     .+6                     ; CHECK UPSTREAM DETECTOR
3404 1A3C          ;                                   SWITCH IS ACTIVATED
3405 1A3C 4001 A           LI      AC1,C1
3406 1A3D E50E A           SKG     AC1,PSWFC               ; SKIP IF FLAG IS CLEAR
3407 1A3E 2102 A           JMP     .+3
3408 1A3F A50C A           ST      AC1,PSWFC               ; SET FLAG
3409 1A40          ;                                   MODIFY NEXT INSTR TO ACCESS OTHER
3410 1A40          ;                                   SIGNATURES IN VCSDB
3411 1A40 A60F A           ST      AC1,D15(AC2)            ; SET FOS STATUS WORD FOR DOWNSTREAM
3412 1A41          ;                                   DEBOUNCE UPSTREAM SWITCH
3413 1A41 075D A           SKBIT   D13                     ; SKIP IF UPSTREAM SWITCH UNACTIVATED
3414 1A42 2103 A           JMP     .+4
3415 1A43          ;                                   SWITCH IS UNACTIVATED
3416 1A43 4000 A           LI      AC1,C0
3417 1A44 A508 A           ST      AC1,PSWFD               ; CLEAR FLAG
3418 1A45 0200 A           RTS     D0                      ; RETURN TO PMON
3419 1A46          ;                                   SWITCH IS ACTIVATED
3420 1A46 4001 A           LI      AC1,C1
3421 1A47 E505 A           SKG     AC1,PSWFD               ; SKIP IF FLAG IS CLEAR
3422 1A48 0200 A           RTS     D0
3423 1A49 A503 A           ST      AC1,PSWFD               ; SET FLAG
3424 1A4A          ;                                   MODIFY NEXT INSTR TO ACCESS OTHER
3425 1A4A          ;                                   SIGNATURES IN VCSDB
3426 1A4A A607 A           ST      AC1,D7(AC2)             ; SET FOS STATUS WORD FOR UPSTREAM
3427 1A4B 0200 A           RTS     D0                      ; RETURN
3428 1A4C          ;
3429 1A4C          ;                                   LOCAL DATA
3430 1A4C 0000 A PSWFC:    .WORD   0
3431 1A4D 0000 A PSWFD:    .WORD   0
3432 1A4E          ;
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3435 1A4E                .LIST   LPR
3436 1A4E                ;
3437 1A4E                PCIM:
3438 1A4E 2100 A         JMP     .+1             ; DEBUG HALT MAY BE INSERTED HERE VIA JSR @ACOTF
3439 1A4F                ;                       PCIM IS CALLED BY PTER TO EXPAND
3440 1A4F                ;                       A TIMING PLAN INTERVAL
3441 1A4F                ;                           APTITE: THE INTERVAL TO BE
3442 1A4F                ;                                   EXPANDED
3443 1A4F                ;                       APTAVT: TIME AVAILABLE TO EXPAND IT
3444 1A4F                ;                       APTPMT: FIRST LOCATION OF THE
3445 1A4F                ;                               MASTER TIMING PLAN FOR
3446 1A4F                ;                               THE CURRENT DIAL SETTING
3447 1A4F                ;                           (IF ZERO, NO COMPARISON WITH
3448 1A4F                ;                               MASTER TABLE IS MADE)
3449 1A4F                ;
3450 1A4F                ;                       STORE AVAILABLE TIME IN PTEM
3451 1A4F 9078 A         LD      AC0,@APTAVT
3452 1A50 3381 A         RCPY    AC0,AC3
3453 1A51 806F A         ST      AC0,@APTEM
3454 1A52                ;                       GENERATE ADDR POINTER TO CI
3455 1A52 9079 A         LD      AC0,@APTITE
3456 1A53 1808 A         BOC     CCZN,PC1            ; BRANCH IF BIT 15 SET
3457 1A54                ;                       INTERVAL IS IN CURRENT CYCLE
3458 1A54 8884 A         LD      AC2,ATIN
3459 1A55 E200 A         SKG     AC0,D0(AC2)         ; SKIP IF CI > CURRENT INTERVAL INDEX
3460 1A56 F200 A         SKNE    AC0,D0(AC2)         ; SKIP IF CI < CURRENT INTERVAL INDEX
3461 1A57 2101 A         JMP     .+2
3462 1A58                ;                       THE INTERVAL HAS EXPIRED
3463 1A58 0201 A         RTS     D1                  ; RETURN FROM PCIM, CONTINUE PTER
3464 1A59                ;                       INTERVAL HAS NOT EXPIRED
3465 1A59 3281 A         RCPY    AC0,AC2
3466 1A5A C88F A         ADD     AC2,ATCTP           ; AC2 POINTS AT CI
3467 1A5B 2103 A         JMP     PC15
3468 1A5C                ;
3469 1A5C                PC1:
3470 1A5C                ;                       INTERVAL IS IN NEXT CYCLE
3471 1A5C 073F A         CLRBIT  D15
3472 1A5D 3281 A         RCPY    AC0,AC2
3473 1A5E C88E A         ADD     AC2,ATNTP           ; AC2 POINTS AT CI
3474 1A5F                ;
3475 1A5F                PC15:
3476 1A5F 8600 A         LD      AC1,D0(AC2)         ; AC1 = DURATION OF CI
3477 1A60 3D00 A         RADD    AC3,AC1             ; AC1 = DURATION CI + AVAILIBLE TIME
3478 1A61                ;
3479 1A61                ;                       SHOULD NEW DURATION OF CI BE COMPARED
3480 1A61                ;                       WITH MASTER TIMING PLAN TABLE
3481 1A61 907A A         LD      AC0,@APTPMT
3482 1A62 1110 A         BOC     CCEZ,PC2
3483 1A63 2100 A         JMP     .+1             ; DEBUG HALT MAY BE INSERTED HERE VIA JSR @ACOTF
3484 1A64                ;                       COMPARE NEW DURATION WITH MASTER
3485 1A64 9079 A         LD      AC0,@APTITE         ; AC0 = CI INDEX
3486 1A65 073F A         CLRBIT  D15
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3487 1A66 8C7A A          LD    AC3,APTPMT        ; AC3 POINTS TO MASTER TIMING PLAN
3488 1A67 C300 A          ADD   AC0,D0(AC3)       ; AC0 POINTS AT CI(MASTER)
3489 1A68 3381 A          RCPY  AC0,AC3
3490 1A69 E700 A          SKG   AC1,D0(AC3)       ; SKIP IF NEW DURATION > CI(MASTER)
3491 1A6A 2108 A          JMP   PC2
3492 1A6B           ;                             REDUCE NEW DURATION OF CI TO
3493 1A6B           ;                             MAX(DURATION CI(MASTER),OLD DURATION CI)
3494 1A6B 8200 A          LD    AC0,D0(AC2)       ; AC0 = DURATION OF CI
3495 1A6C E300 A          SKG   AC0,D0(AC3)       ; SKIP IF AC0 > DURATION CI(MASTER)
3496 1A6D 2101 A          JMP   .+2
3497 1A6E           ;                             DURATION OF CI REMAINS THE SAME
3498 1A6F 0201 A          RTS   D1                ;RETURN FROM PCIM, CONTINUE PTER
3499 1A6F           ;                             EXPAND DURATION CI TO DURATION CI(MASTER)
3500 1A6F D700 A          SUB   AC1,D0(AC3)       ; AC1 = AC1 - DURATION CI(MASTER)
3501 1A70 B478 A          ST    AC1,@APTAVT
3502 1A71 8700 A          LD    AC1,D0(AC3)       ; AC1 = DURATION CI(MASTER)
3503 1A72 2102 A          JMP   .+3
3504 1A73           PC2:
3505 1A73 4C00 A          LI    AC0,C0
3506 1A74 B078 A          ST    AC0,@APTAVT
3507 1A75 A600 A          ST    AC1,D0(AC2)       ; DURATION CI = AC1
3508 1A76 2100 A          JMP   .+1               ;DEBUG HALT MAY BE INSERTED HERE VIA JSR @ACOTF
3509 1A77           ;                             IF CI INDEX = CURRENT INTERVAL INDEX,
3510 1A77           ;                             ADJUST CURRENT INTERVAL TIMER
3511 1A77 9079 A          LD    AC0,@APTITE
3512 1A78 1808 A          BOC   CCZN,PC3
3513 1A79 8884 A          LD    AC2,ATIN
3514 1A7A F200 A          SKNE  AC0,D0(AC2)       ; SKIP IF CI INDEX NOT = CURRENT
3515 1A7B           ;                               INTERVAL INDEX
3516 1A7B 2101 A          JMP   .+2
3517 1A7C 2107 A          JMP   PC3               ; RETURN FROM PCIM
3518 1A7D 2100 A          JMP   .+1             ; DEBUG HALT MAY BE INSERTED HERE VIA JSR @ACOTF
3519 1A7E           ;                             ADJUST CURRENT INTERVAL TIMER
3520 1A7E 906F A          LD    AC0,@APTEM
3521 1A7F 8C78 A          LD    AC3,APTAVT
3522 1A80 D300 A          SUB   AC0,D0(AC3)       ; AC0 = TIME ADDED TO CI
3523 1A81 8885 A          LD    AC2,ATINT       ; ADDRESS OF CURRENT INTERVAL TIMER
3524 1A82 C200 A          ADD   AC0,D0(AC2)
3525 1A83 B085 A          ST    AC0,@ATINT      ; MODIFY CURRENT INTERVAL TIMER
3526 1A84           ;
3527 1A84           ;                             IF ALL AVAILABLE TIME HAS BEEN RESTORED
3528 1A84           ;                             RETURN FROM PCIM AND RETURN FROM PTER,
3529 1A84           ;                             OTHERWISE RETURN FROM PCIM AND CONTINUE PTER
3530 1A84 9078 A PC3:     LD    AC0,@APTAVT
3531 1A85 1101 A          BOC   CCEZ,.+2
3532 1A86 0201 A          RTS   D1                ; RETURN FROM PCIM, CONTINUE PTER
3533 1A87 0200 A          RTS   D0                ; RETURN FROM PCIM, RETURN FROM PTER
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1A88                    .LIST   LPR
1A88            ;                                   PREEMPT TERMINATION
1A88            PTER:
1A88 2100 A             JMP     .+1                     ; DEBUG HALT VIA JSR @ACOTF
1A89            ;                                   RECORD TIME OF PREEMPT TERMINATION
1A89 949B A             LD      AC1,@AETCY
1A8A 88BA A             LD      AC2,ACTST
1A8B A601 A             ST      AC1,D1(AC2)
1A8C            ;
1A8C            ;                                   TEST WAIT/CONTROL BIT
1A8C 9069 A             LD      AC0,@ABDIN              ; AC0 = BDIN
1A8D 075E A             SKBIT   D14                     ; SKIP IF WAIT/CONTROL FLAG = 1
1A8E 2101 A             JMP     .+2
1A8F 0200 A     PTRET:  RTS     D0                      ; RETURN FROM PTER
1A90            ;                                   TEST PREEMPT IN PROGRESS FLAG
1A90 906E A             LD      AC0,@APIP               ; AC0 = PREEMPT IN PROGRESS FLAG
1A91 887F A             LD      AC2,AVCDT               ; AC2 POINTS AT DETECTOR INDEX
1A92 F200 A             SKNE    AC0,D0(AC2)
1A93 2101 A             JMP     .+2
1A94 21FA A             JMP     PTRET
1A95            ;                                   CAN EXTENDIBLE PERIOD BE REDUCED
1A95 9073 A             LD      AC0,@APMIF              ; AC0 = PMIF
1A96 1B02 A             BOC     CCZN,PT2                ; JUMP IF BIT 15 = 1
1A97 888F A             LD      AC2,ATCTP               ; AC2 = POINTER TO CURRENT CYCLE PLAN
1A98 2102 A             JMP     PT3
1A99 073F A     PT2:    CLRBIT  DI5
1A9A 888E A             LD      AC2,ATNTP               ; AC2 = POINTER TO NEXT CYCLE PLAN
1A9B 3200 A     PT3:    RADD    AC0,AC2                 ; AC2 POINTS AT EI
1A9C B86F A             ST      AC2,@APTEM
1A9D 9883 A             LD      AC2,@ATCDS              ; AC2 = DIAL SETTING
1A9E C88A A             ADD     AC2,ATPP
1A9F 8600 A             LD      AC1,D0(AC2)             ; AC1 = POINTER TO MASTER TIMING PLAN
1AA0 B47A A             ST      AC1,@APTPMT             ; PTPMT = POINTER TO MASTER TIMING PLAN
1AA1 3100 A             RADD    AC0,AC1                 ; AC1 = POINTER TO EI(MASTER)
1AA2 986F A             LD      AC2,@APTEM              ; AC2 = POINTER TO EI
1AA3 8E00 A             LD      AC3,D0(AC2)             ; AC3 = DURATION OF EI
1AA4 3681 A             RCPY    AC1,AC2
1AA5 DE00 A             SUB     AC3,D0(AC2)             ; AC3 = DURATION EI - DURATION EI(MASTER)
1AA6 3C81 A             RCPY    AC3,AC0
1AA7 1B34 A             BOC     CCZN,PTEND              ; JUMP IF AC0 < 0
1AA8 1133 A             BOC     CCEZ,PTEND              ; JUMP IF AC0 = 0
1AA9            ;                                   HAS EXTENDIBLE PERIOD EXPIRED
1AA9 9073 A             LD      AC0,@APMIF              ; AC0 = PMIF
1AAA 1B17 A             BOC     CCZN,PT6                ; JUMP IF BIT 15 = 1
1AAB 8884 A             LD      AC2,ATIN
1AAC E200 A             SKG     AC0,D0(AC2)             ; SKIP IF EI(INDEX) > CURRENT INTERVAL IN
1AAD 2101 A             JMP     .+2
1AAE 2113 A             JMP     PT6
1AAF F200 A             SKNE    AC0,D0(AC2)             ; SKIP IF EI INDEX < CURRENT INTERVAL
1AB0 2101 A             JMP     PT4
1AB1 212A A             JMP     PTEND
1AB2            ;                                   REDUCE EI
```

```
3588 1AB2          ;
3589 1AB2          ;                                   EI INDEX = CURRENT INTERVAL INDEX
3590 1AB2 8685 A PT4:    LD    AC2,ATINT              ; AC2 = POINTER TO TIMER
3591 1AB3 EE00 A         SKG   AC3,D0(AC2)            ; SKIP IF DURATION(EI - EI(MASTER))>TIMER
3592 1AB4 2108 A         JMP   PT5
3593 1AB5 9C6F A         LD    AC3,@APTEM             ; AC3 = POINTER TO EI
3594 1AB6 8300 A         LD    AC0,D0(AC3)            ; AC0 = DURATION OF EI
3595 1AB7 D200 A         SUB   AC0,D0(AC2)            ; AC0 = DURATION EI - TIMER
3596 1AB8 A300 A         ST    AC0,D0(AC3)            ; DURATION EI = DURATION EI - TIMER
3597 1AB9 9C85 A         LD    AC3,@ATINT
3598 1ABA 4C00 A         LI    AC0,C0
3599 1ABB B285 A         ST    AC0,@ATINT             ; TIMER = 0
3600 1ABC 2109 A         JMP   PT7
3601 1ABD 5301 A PT5:    CAI   AC3,C1                 ; AC3 = -DURATION(EI - EI(MASTER))
3602 1ABE 9885 A         LD    AC2,@ATINT             ; AC2 = TIMER
3603 1ABF 3E00 A         RADD  AC3,AC2                ; AC2 = TIMER - DURATION(EI - EI(MASTER))
3604 1AC0 9885 A         ST    AC2,@ATINT
3605 1AC1 5301 A         CAI   AC3,C1                 ; AC3 = DURATION(EI - EI(MASTER))
3606 1AC2          ;                                   EI INDEX > CURRENT INTERVAL INDEX
3607 1AC2 3681 A PT6:    RCPY  AC1,AC2                ; AC2 = POINTER TO EI MASTER
3608 1AC3 8200 A         LD    AC0,D0(AC2)            ; AC0 = DURATION EI(MASTER)
3609 1AC4 9C6F A         LD    AC2,@APTEM             ; AC2 = POINTER TO EI
3610 1AC5 A200 A         ST    AC0,D0(AC2)            ; DURATION EI = DURATION EI(MASTER)
3611 1AC6          PT7:
3612 1AC6 BC78 A         ST    AC3,@APTAVT            ; PTAVT = DURATION(EI-EI(MASTER))
3613 1AC7          ;                                   EXPAND CI(S)
3614 1AC7 8873 A         LD    AC2,APMIF
3615 1AC8 8202 A         LD    AC0,D2(AC2)
3616 1AC9 1103 A         BOC   CCEZ,PT8               ; IF CI(S) UNSPECIFIED, JUMP TO
3617 1ACA          ;                                     EXPAND CI(P)
3618 1ACA B079 A         ST    AC0,@APTITE            /
3619 1ACB 2C34 A         JSR   @APCIM
3620 1ACC 210F A         JMP   PTEND                  ; RETURN FROM PTER
3621 1ACD          ;                                   EXPAND CI(P)
3622 1ACD 4C00 A PT8:    LI    AC0,C0
3623 1ACE B07A A         ST    AC0,@APTPMT
3624 1ACF 8873 A         LD    AC2,APMIF
3625 1AD0 8201 A         LD    AC0,D1(AC2)            ; AC0 POINTS TO CI(P)
3626 1AD1 B079 A         ST    AC0,@APTITE
3627 1AD2 2C34 A         JSR   @APCIM
3628 1AD3 2103 A         JMP   PTEND                  ; RETURN FROM PTER
3629 1AD4          ;
3630 1AD4          ;                                   EXPAND CI(P) NEXT CYCLE
3631 1AD4 8873 A         LD    AC2,APMIF
3632 1AD5 8201 A         LD    AC0,D1(AC2)            ; AC0 = CI(P) INDEX
3633 1AD6 073F A         CLRBIT D15
3634 1AD7 C08E A         ADD   AC0,ATNTP              ; AC0 POINTS AT CI(P)
3635 1AD8 3281 A         RCPY  AC0,AC2
3636 1AD9 8200 A         LD    AC0,D0(AC2)            ; AC0 = DURATION OF CI(P)
3637 1ADA 3C00 A         RADD  AC3,AC0
3638 1ADB A200 A         ST    AC0,D0(AC2)            ; STORE NEW DURATION OF CI(P)
3639 1ADC 4C00 A PTEND:  LI    AC0,C0
```

```
3640 1ADD B06E A        ST      AC0,@APIP
3641 1ADE 2100 A        JMP     .+1             ; DEBUG HALT MAY BE INSERTED HERE VIA JSR @AC0TF
3642 1ADF 0200 A        RTS     D0                      ; RETURN FROM PTER
3643 1AE0       ;
```

```
3646 1AF0                    .LIST   LPR
3647 1AF0 1AF0 A PMAS:       .WORD   PMAS
3648 1AF1 0001 A             .WORD   X'0001
3649 1AF2 0010 A             .WORD   X'0010
3650 1AF3 0100 A             .WORD   X'0100
3651 1AF4 0004 A PRHD:       .WORD   DETS          ; HIGHEST DETECTOR INDEX EXPECTED
3652 1AF5 0000 A PRLD:       .WORD   0             ; LOWEST DETECTOR INDEX EXPECTED - 1
```

```
3655 1AE6                .LIST   LPR
3656 1AE6            ;
3657 1AE6            ;                                   LOCAL DATA
3658 1AE6            ;
3659 1AE6            PREQ:
3660 1AE6 2100 A             JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
3661 1AE7            ;                                   RECORD TIME OF PREEMPT REQUEST
3662 1AE7 9498 A             LD      AC1,@AETCY
3663 1AE8 88BA A             LD      AC2,ACTST
3664 1AE9 A600 A             ST      AC1,D0(AC2)
3665 1AEA            ;                                   TEST WAIT/CONTROL FLAG
3666 1AEA 9069 A             LD      AC0,@ABDIN              ; AC0 = BDIN
3667 1AEB 075E A             SKBIT   D14                     ; SKIP IF WAIT/CONTROL FLAG IS SET
3668 1AEC 2101 A             JMP     .+2
3669 1AED 0200 A PRET:       RTS     D0                      ; RETURN FROM PREQ
3670 1AEE            ;                                   TEST PANEL SWITCH SETTING
3671 1AEE 9883 A             LD      AC2,@ATCDS
3672 1AEF C9F0 A             ADD     AC2,PMAS
3673 1AF0 9458 A             LD      AC1,@ABPPD
3674 1AF1 7600 A             SKAZ    AC1,D0(AC2)             ; SKIP IF SWITCH OFF
3675 1AF2 2103 A             JMP     PR0
3676 1AF3 0200 A             RTS     D0                      ; RETURN
3677 1AF4            ;                                   ERROR HANDLING ROUTINES
3678 1AF4 8C77 A PRER8:      LD      AC3,APERR
3679 1AF5 947E A             LD      AC1,@AVCDT
3680 1AF6 2C51 A             JSR     @AERE8
3681 1AF7 0200 A             RTS     D0                      ; RETURN
3682 1AF8 8C77 A PRER9:      LD      AC3,APERR
3683 1AF9 947E A             LD      AC1,@AVCDT
3684 1AFA 2C52 A             JSR     @AERE9
3685 1AFB 4C00 A             LI      AC0,C0
3686 1AFC BC6E A             ST      AC0,@APIP
3687 1AFD 0200 A             RTS     D0                      ; RETURN
3688 1AFE            ;
3689 1AFF            ;                                   TEST PREEMPT IN PROGRESS FLAG
3690 1AFE 906E A PR0:        LD      AC0,@APIP
3691 1AFF 15ED A             BOC     CCNZ,PRET               ; BRANCH IF PIP FLAG SET
3692 1B00            ;
3693 1B00            ;                                   SET PREEMPT IN PROGRESS FLAG
3694 1B00 907E A             LD      AC0,@AVCDT
3695 1B01 E1E2 A             SKG     AC0,PRHD                ; SKIP IF VCDT > HIGHEST EXPECTED INDEX
3696 1B02 E1E2 A             SKG     AC0,PRLD                ; SKIP IF VCDT > LOWEST EXPECTED INDEX
3697 1B03 21F0 A             JMP     PRER8
3698 1B04 3381 A             RCPY    AC0,AC3
3699 1B05 4B01 A             AISZ    AC3,C1
3700 1B06 BC6E A             ST      AC3,@APIP
3701 1B07            ;                                   ACCESS APPROACH PARAMETERS
3702 1B07 8C96 A             LD      AC3,ATECI
3703 1B08 48FF A             AISZ    AC0,CM1
3704 1B09 2101 A             JMP     .+2
3705 1B0A 2105 A             JMP     .+6
3706 1B0B 19EC A PR1:        BOC     CCZN,PRER9              ; BRANCH IF DOWNSTREAM DETECTOR
```

```
3707 180C 4804 A          AISZ    AC3,C4
3708 180D 3081 A          NOP
3709 180E 48FE A          AISZ    AC0,CM2
3710 180F 21FB A          JMP     PR1
3711 1810         ;                                 DETERMINE 'MAXIMUM EXTENSION' FOR
3712 1810         ;                                 CURRENT DIAL SETTING
3713 1810 9883 A          LD      AC2,@ATCDS              ; AC2 = DIAL SETTING
3714 1811 C876 A          ADD     AC2,APEMAX
3715 1812 8200 A          LD      AC0,D0(AC2)             ; AC0 = E(MAX) FOR CURRENT
3716 1813         ;                                         DIAL SETTING
3717 1813 8076 A          ST      AC0,@APEMAX             ; PEMAX = AC0
3718 1814         ;
3719 1814         ;                                 DOES EI PRECEDE CI.
3720 1814 8800 A          LD      AC2,D0(AC3)             ; AC2 = CI
3721 1815 E302 A          SKG     AC2,D2(AC3)             ; SKIP IF CI > EI
3722 1816 214E A          JMP     P5                      ; JUMP TO PART D
3723 1817         ;                                 IF EI HAS NOT EXPIRED, JUMP TO PART C.
3724 1817 9484 A          LD      AC1,@ATIN               ; AC1 = CURRENT INTERVAL INDEX
3725 1818 E702 A          SKG     AC1,D2(AC3)             ; SKIP IF CII > EI
3726 1819 213B A          JMP     P3                      ; JUMP TO PART C
3727 181A         ;                                 IF CI HAS EXPIRED, JUMP TO PART B.
3728 181A F700 A          SKNE    AC1,D0(AC3)             ; SKIP IF CII NOT = CI
3729 181B 2103 A          JMP     .+4
3730 181C F700 A          SKG     AC1,D0(AC3)             ; SKIP IF CII > CI
3731 181D 2104 A          JMP     .+5
3732 181E 2117 A          JMP     P2                      ; JUMP TO PART B.
3733 181F 9085 A          LD      AC0,@ATINT              ; AC0 = TIMER
3734 1820 E303 A          SKG     AC0,D3(AC3)             ; SKIP IF TIMER > C(MIN)
3735 1821 2114 A          JMP     P2                      ; JUMP TO PART B
3736 1822         ;
```

```
3739 1822                .LIST   LPR
3740 1822          ;                          CONTRACTIBLE INTERVAL HAS NOT EXPIRED.
3741 1822 2100 A           JMP     .+1                ; JSR @ACOTF CAN BE INSERTED HERE
3742 1823 8873 A           LD      AC2,APMIF          ;AC2 POINTS AT PMIF ARRAY.
3743 1824          ;                          GENERATE POINTER TO SECONDARY CI
3744 1824 808E A           LD      AC0,ATNTP
3745 1825 C301 A           ADD     AC0,D1(AC3)
3746 1826 8071 A           ST      AC0,@APTCS
3747 1827 8301 A           LD      AC0,D1(AC3)
3748 1828 072F A           SETBIT  D15
3749 1829 A202 A           ST      AC0,D2(AC2)
3750 182A          ;                          GENERATE POINTER TO EI
3751 182A 808E A           LD      AC0,ATNTP
3752 182B C302 A           ADD     AC0,D2(AC3)
3753 182C 8072 A           ST      AC0,@APTEI
3754 182D 8302 A           LD      AC0,D2(AC3)
3755 182E 072F A           SETBIT  D15
3756 182F A200 A           ST      AC0,D0(AC2)
3757 1830          ;                          GENERATE POINTER TO CI
3758 1830 8300 A           LD      AC0,D0(AC3)
3759 1831 A201 A           ST      AC0,D1(AC2)
3760 1832 888F A           LD      AC2,ATCTP
3761 1833 3200 A           BADD    AC0,AC2
3762 1834 8870 A           ST      AC2,@APTCP
3763 1835 2175 A           JMP     P8
3764 1836          ;
```

```
3767 1B36                .LIST   LPR
3768 1B36          P2:
3769 1B36 2100 A           JMP     .+1                 ; JSR @ACOTF CAN BE INSERTED HERE
3770 1B37 8873 A           LD      AC2,APMIF           ; AC2 POINTS AT PMIF ARRAY
3771 1B38 4C00 A           LI      AC0,C0
3772 1B39 A202 A           ST      AC0,D2(AC2)
3773 1B3A B071 A           ST      AC0,@APTCS
3774 1B3B          ;                                   GENERATE POINTER TO EI
3775 1B3B 848E A           LD      AC1,ATNTP
3776 1B3C 8302 A           LD      AC0,D2(AC3)
3777 1B3D 3100 A           RADD    AC0,AC1
3778 1B3E D472 A           ST      AC1,@APTEI
3779 1B3F 072F A           SETBIT  D15
3780 1B40 A200 A           ST      AC0,D0(AC2)
3781 1B41          ;                                   GENERATE POINTER TO CI(P)
3782 1B41 8300 A           LD      AC0,D0(AC3)
3783 1B42 072F A           SETBIT  D15
3784 1B43 A201 A           ST      AC0,D1(AC2)
3785 1B44 8B00 A           LD      AC2,D0(AC3)
3786 1B45 C88E A           ADD     AC2,ATNTP
3787 1B46 B870 A           ST      AC2,@APTCP          ; SAVE POINTER
3788 1B47 8200 A           LD      AC0,(AC2)           ; AC0 = DURATION CI(P)
3789 1B48 3181 A           RCPY    AC0,AC1             ; AC1 = DURATION OF CI(P)
3790 1B49 0303 A           SUB     AC0,D3(AC3)         ; AC0 = DURATION CI(P) - C(MIN)
3791 1B4A 8876 A           LD      AC2,APEMAX
3792 1B4B E200 A           SKG     AC0,D0(AC2)         ; SKIP IF DURATION(CI(P) - C(MIN))>E(MAX)
3793 1B4C 2101 A           JMP     .+2
3794 1B4D 8200 A           LD      AC0,D0(AC2)         ; AC0 = E(MAX)
3795 1B4E          ;                                   REDUCE CI
3796 1B4E 5001 A           CAI     AC0,C1
3797 1B4F 3100 A           RADD    AC0,AC1             ; AC1 = AC1 - AC0
3798 1B50 5001 A           CAI     AC0,C1
3799 1B51 9870 A           LD      AC2,@APTCP
3800 1B52 A600 A           ST      AC1,D0(AC2)
3801 1B53          ;                                   EXPAND EI
3802 1B53 2500 A           JMP     @PT18A
3803 1B54 1C04 A PT18A:    .WORD   P18A
3804 1B55          ;
```

PREEMPT CPC - PREEMPT REQUEST (PART C)

```
3807 1855                .LIST   LPR
3808 1855          P3:
3809 1855 8873 A           LD      AC2,APMIF
3810 1856 8300 A           LD      AC0,D0(AC3)          ; GENERATE POINTER TO CI(P)
3811 1857 A201 A           ST      AC0,D1(AC2)
3812 1858 C08F A           ADD     AC0,ATCTP
3813 1859 8070 A           ST      AC0,@APTCP
3814 185A 808E A           LD      AC0,ATNTP            ; GENERATE POINTER TO CI(S)
3815 185B C301 A           ADD     AC0,D1(AC3)
3816 185C 8071 A           ST      AC0,@APTCS
3817 185D 8301 A           LD      AC0,D1(AC3)
3818 185E 072F A           SETBIT  D15
3819 185F A202 A           ST      AC0,D2(AC2)
3820 1860 8302 A           LD      AC0,D2(AC3)          ; GENERATE POINTER TO EI
3821 1861 A200 A           ST      AC0,D0(AC2)
3822 1862 C08F A           ADD     AC0,ATCTP
3823 1863 8072 A           ST      AC0,@APTEI
3824 1864 215F A           JMP     P10
3825 1865          ;
```

```
3828 1865                .LIST   LPR
3829 1865          ;                                   HAS EXTENDIBLE INTERVAL EXPIRED
3830 1865          P5:
3831 1865 2100 A           JMP     .+1                 ; JSR @ACOTF CAN BE INSERTED HERE
3832 1866 9084 A           LD      AC0,@ATIN
3833 1867 E302 A           SKG     AC0,D2(AC3)         ; SKIP IF EI HAS EXPIRED.
3834 1868 2115 A           JMP     P6                  ; JUMP TO PART E.
3835 1869          ;                                   REDUCE DURATION OF CI TO MIN IN NEXT CYCLE.
3836 1869          ;                                   ADD TIME FROM CI TO DURATION OF EI NEXT CYCLE.
3837 1869 8873 A           LD      AC2,APMIF
3838 186A 8300 A           LD      AC0,D0(AC3)
3839 186B 072F A           SETBIT  D15
3840 186C A201 A           ST      AC0,D1(AC2)
3841 186D 8302 A           LD      AC0,D2(AC3)
3842 186E 072F A           SETBIT  D15
3843 186F A200 A           ST      AC0,D0(AC2)
3844 1870 4C00 A           LI      AC0,C0
3845 1871 A202 A           ST      AC0,D2(AC2)
3846 1872 888E A           LD      AC2,ATNTP
3847 1873 C800 A           ADD     AC2,D0(AC3)         ; AC2 POINTS TO CI(P)
3848 1874 8703 A           LD      AC1,D3(AC3)         ; AC1 = C(MIN)
3849 1875 8200 A           LD      AC0,(AC2)           ; AC2 = DURATION CI(P)
3850 1876 A600 A           ST      AC1,(AC2)           ; DURATION CI(P) = C(MIN)
3851 1877 D303 A           SUB     AC0,D3(AC3)         ; AC0 = DURATION CI(P) - C(MIN)
3852 1878 888E A           LD      AC2,ATNTP
3853 1879 C802 A           ADD     AC2,D2(AC3)         ; AC2 POINTS AT EI
3854 187A C200 A           ADD     AC0,(AC2)           ; AC0 = AVAILABLE TIME + DURATION EI
3855 187B A200 A           ST      AC0,(AC2)
3856 187C 2500 A           JMP     @PT20
3857 187D 1C10 A PT20:     .WORD   P20
3858 187E          ;
```

```
3861 1B7E                .LIST   LPR
3862 1B7E          P6:
3863 1B7E 2100 A           JMP     .+1                 ; JSR @ACOTF CAN BE INSERTED HERE
3864 1B7F F300 A           SKNE    AC0,D0(AC3)         ; IF CI HAS NOT EXPIRED, JUMP TO PART F.
3865 1B80 2103 A           JMP     .+4
3866 1B81 E300 A           SKG     AC0,D0(AC3)         ; SKIP IF CURRENT INTERVAL > CI INDEX
3867 1B82 2117 A           JMP     P7                  ; JUMP TO PART F
3868 1B83 2104 A           JMP     .+5
3869 1B84 9085 A           LD      AC0,@ATINT
3870 1B85 E303 A           SKG     AC0,D3(AC3)         ; SKIP IF TIMER > C(MIN)
3871 1B86 2101 A           JMP     .+2
3872 1B87 2112 A           JMP     P7                  ; JUMP TO PART F.
3873 1B88 8873 A           LD      AC2,APMIF           ; AC2 POINTS AT PMIF ARRAY
3874 1B89                  ;                         GENERATE POINTER TO CI(P)
3875 1B89 808E A           LD      AC0,ATNTP
3876 1B8A C200 A           ADD     AC0,D0(AC3)
3877 1B8B B070 A           ST      AC0,@APTCP
3878 1B8C 8300 A           LD      AC0,D0(AC3)
3879 1B8D 072F A           SETBIT  D15
3880 1B8E A201 A           ST      AC0,D1(AC2)
3881 1B8F                  ;                         GENERATE POINTER TO CI(S)
3882 1B8F 808E A           LD      AC0,ATNTP
3883 1B90 C301 A           ADD     AC0,D1(AC3)
3884 1B91 B071 A           ST      AC0,@APTCS
3885 1B92 8301 A           LD      AC0,D1(AC3)
3886 1B93 072F A           SETBIT  D15
3887 1B94 A201 A           ST      AC0,D1(AC2)
3888 1B95                  ;                         GENERATE POINTER TO EI
3889 1B95 8302 A           LD      AC0,D2(AC3)
3890 1B96 A200 A           ST      AC0,D0(AC2)
3891 1B97 C08F A           ADD     AC0,ATCTP
3892 1B98 B072 A           ST      AC0,@APTEI
3893 1B99 212A A           JMP     P10
```

```
3896 1B9A                .LIST   LPR
3897 1B9A          P7:
3898 1B9A 2100 A           JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
3899 1B9B 8873 A           LD      AC2,APMIF               ; AC2 POINTS AT PMIF ARRAY
3900 1B9C          ;                                   GENERATE POINTERS TO CI(S)
3901 1B9C 808E A           LD      AC0,ATNTP
3902 1B9D C301 A           ADD     AC0,D1(AC3)
3903 1B9E B071 A           ST      AC0,@APTCS
3904 1B9F 8301 A           LD      AC0,D1(AC3)
3905 1BA0 072F A           SETBIT  D15
3906 1BA1 A202 A           ST      AC0,D2(AC2)
3907 1BA2          ;                                   GENERATE POINTER TO EI
3908 1BA2 8302 A           LD      AC0,D2(AC3)
3909 1BA3 A200 A           ST      AC0,D0(AC2)
3910 1BA4 C08F A           ADD     AC0,ATCTP
3911 1BA5 B072 A           ST      AC0,@APTEI
3912 1BA6          ;                                   GENERATE POINTER TO CI(P)
3913 1BA6 8300 A           LD      AC0,D0(AC3)
3914 1BA7 A201 A           ST      AC0,D1(AC2)
3915 1BA8 888F A           LD      AC2,ATCTP
3916 1BA9 3200 A           RADD    AC0,AC2
3917 1BAA B870 A           ST      AC2,@APTCP
3918 1BAB          P8:
3919 1BAB 2100 A           JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
3920 1BAC 8200 A           LD      AC0,D0(AC2)             ; AC0 = DURATION OF CI(P)
3921 1BAD 9484 A           LD      AC1,@ATIN
3922 1BAE F700 A           SKNE    AC1,D0(AC3)             ; SKIP IF CURRENT INTERVAL NOT = CI INDEX
3923 1BAF 2104 A           JMP     .+5
3924 1BB0 D303 A           SUB     AC0,D3(AC3)             ; AC0 = DURATION OF CI(P) - C(MIN)
3925 1BB1 8703 A           LD      AC1,D3(AC3)             ; AC1 = C(MIN)
3926 1BB2 A600 A           ST      AC1,D0(AC2)             ; DURATION CI(P) = C(MIN)
3927 1BB3 210B A           JMP     .+12
3928 1BB4          ;                                   CI IS CURRENT CYCLE
3929 1BB4 8885 A           LD      AC2,ATINT
3930 1BB5 D200 A           SUB     AC0,D0(AC2)             ; AC0 = DURATION CI(P) - TIMER
3931 1BB6 C303 A           ADD     AC0,D3(AC3)             ; AC0 = TIME LEFT
3932 1BB7 9870 A           LD      AC2,@APTCP
3933 1BB8 A200 A           ST      AC0,D0(AC2)
3934 1BB9 9085 A           LD      AC0,@ATINT              ; AC0 = TIMER
3935 1BBA D303 A           SUB     AC0,D3(AC3)             ; AC0 = TIMER - C(MIN)
3936 1BBB 1201 A           BOC     CCZP,.+2
3937 1BBC 4C00 A           LI      AC0,C0
3938 1BBD          ;                                   AC0 = AVAILABLE TIME
3939 1BBD 8703 A           LD      AC1,D3(AC3)
3940 1BBE B485 A           ST      AC1,@ATINT              ; SET TIMER TO C(MIN)
3941 1BBF 8876 A           LD      AC2,APEMAX
3942 1BC0 E200 A           SKG     AC0,D0(AC2)             ; SKIP IF AC0 > E(MAX)
3943 1BC1 F200 A           SKNE    AC0,D0(AC2)             ; SKIP IF AC0 NOT = E(MAX)
3944 1BC2 2141 A           JMP     P18A
3945 1BC3 212D A           JMP     P14A
3946 1BC4          ;
```

```
1BC4                .LIST   LPR
1BC4          ;                                ATTEMPT TO REDUCE CI(P)
1BC4          ;                                CI(P) IS NOT THE CURRENT INTERVAL
1BC4          P10:
1BC4 2100 A         JMP     .+1                  ; JSR @ACOTF CAN BE INSERTED HERE
1BC5 9870 A         LD      AC2,@APTCP
1BC6 8200 A         LD      AC0,(AC2)            ; AC0 = DURATION CI(P)
1BC7 D303 A         SUB     AC0,D3(AC3)          ; AC0 = CI(P) - C(MIN)
1BC8 1B26 A         BOC     CCZN,P14             ; BRANCH TO P14 IF AC0 < ZERO
1BC9 8703 A         LD      AC1,D3(AC3)          ; AC1 = C(MIN)
1BCA A600 A         ST      AC1,(AC2)            ; DURATION OF CI(P) = C(MIN)
1BCB 8876 A         LD      AC2,APEMAX
1BCC F200 A         SKNE    AC0,D0(AC2)
1BCD 2134 A         JMP     P18
1BCE E200 A         SKG     AC0,D0(AC2)          ; SKIP IF AC0 > PEMAX
1BCF 2121 A         JMP     P14A
1BD0          ;                                AVAILABLE TIME > E(MAX)
1BD0 D200 A         SUB     AC0,D0(AC2)          ; AC0 = DURATION CI(P) - C(MIN)
1BD1          ;                                          MAX DURATION EI
1BD1 3400 A         RADD    AC1,AC0              ; AC0 = DURATION CI(P) - DURATION EI
1BD2 9870 A         LD      AC2,@APTCP
1BD3 A200 A         ST      AC0,(AC2)
1BD4 212D A         JMP     P18
1BD5          ;                                CI(P) IS THE CURRENT INTERVAL
1BD5          P12:
1BD5 2100 A         JMP     .+1                  ; JSR @ACOTF CAN BE INSERTED HERE
1BD6 8085 A         LD      AC0,ATINT            ; AC0 = TIMER
1BD7 D303 A         SUB     AC0,D3(AC3)          ; AC0 = AVAILABLE TIME
1BD8 1B16 A         BOC     CCZN,P14             ; BRANCH TO P14 IF AC0 < ZERO
1BD9          ;                                AVAILABLE TIME > ZERO
1BD9 9870 A         LD      AC2,@APTCP
1BDA 8600 A         LD      AC1,(AC2)            ; AC1 = DURATION OF CI(P)
1BDB 8885 A         LD      AC2,ATINT
1BDC D600 A         SUB     AC1,D0(AC2)          ; AC1 = DURATION CI(P) - TIMER
1BDD C703 A         ADD     AC1,D3(AC3)          ; AC1 = DURATION CI(P) - TIMER + C(MIN)
1BDE 9870 A         LD      AC2,@APTCP
1BDF A600 A         ST      AC1,(AC2)
1BE0 8803 A         LD      AC2,D3(AC3)          ; AC2 = C(MIN)
1BE1 B885 A         ST      AC2,@ATINT           ; SET TIMER TO C(MIN)
1BE2 8876 A         LD      AC2,APEMAX
1BE3 F200 A         SKNE    AC0,D0(AC2)          ; SKIP IF AVAILABLE TIME .NE. E(MAX)
1BE4 211D A         JMP     P18
1BE5 E200 A         SKG     AC0,D0(AC2)          ; SKIP IF AVAILABLE TIME > E(MAX)
1BE6 210A A         JMP     P14A
1BE7 D200 A         SUB     AC0,D0(AC2)          ; AC0 = AVAILABLE TIME - E(MAX)
1BE8 3100 A         RADD    AC0,AC1              ; INCREASE DURATION OF CI(P)
1BE9 9870 A         LD      AC2,@APTCP
1BEA A200 A         ST      AC0,(AC2)            ; STORE NEW VALUE OF CI(P)
1BEB 8803 A         LD      AC2,D3(AC3)
1BEC 3200 A         RADD    AC0,AC2              ; INCREASE TIMER
1BED B885 A         ST      AC2,@ATINT           ; STORE NEW TIMER VALUE
1BEE 2113 A         JMP     P18
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4001 1BEE          P14:
4002 1BEF 2100 A          JMP     .+1                 ; JSR @ACOTF CAN BE INSERTED HERE
4003 1BF0 4C00 A          LI      AC0,0               ; AC0 = 0
4004 1BF1 B06E A P14A:    ST      AC0,@APTEM          ; TEM HOLDS TIME AVAILABLE FROM CI(P)
4005 1BF2 9876 A          LD      AC2,APEMAX
4006 1BF3 D200 A          SUB     AC0,D0(AC2)         ; AC0 = TIME NEEDED FROM CI(S)
4007 1BF4 9871 A          LD      AC2,@APTCS
4008 1BF5 8600 A          LD      AC1,(AC2)           ; AC1 = DURATION CI(S)
4009 1BF6 3400 A          RADD    AC1,AC0
4010 1BF7 E303 A          SKG     AC0,D3(AC3)         ; SKIP IF AC0 > C(MIN)
4011 1BF8 F303 A          SKNE    AC0,D3(AC3)         ; SKIP IF AC0 NOT = C(MIN)
4012 1BF9 2106 A          JMP     .+7
4013 1BFA          ;                                 TIME LEFT < C(MIN)
4014 1BFA D703 A          SUB     AC1,D3(AC3)         ; AC1 = DURATION CI(S) - C(MIN)
4015 1BFB 906E A          LD      AC0,@APTEM          ; AC0 = TIME AVAILABLE FROM CI(P)
4016 1BFC 3400 A          RADD    AC1,AC0             ; AC0 = TOTAL TIME AVAILABLE
4017 1BFD 8703 A          LD      AC1,D3(AC3)
4018 1BFE A600 A          ST      AC1,(AC2)           ; DURATION CI(S) = C(MIN)
4019 1BFF 2104 A          JMP     P18A
4020 1C00          ;                                 TIME LEFT => C(MIN)
4021 1C00 A200 A          ST      AC0,(AC2)
4022 1C01 2100 A          JMP     P18
4023 1C02          ;
4024 1C02          ;                                 EXPAND EI.
4025 1C02          P18:
4026 1C02 2100 A          JMP     .+1                 ; JSR @ACOTF CAN BE INSERTED HERE
4027 1C03 9076 A          LD      AC0,@APEMAX         ; AC0 = MAX EXTENSION
4028 1C04          ;                                 AC0 = AVAILABLE TIME
4029 1C04 9872 A P18A:    LD      AC2,@APTEI
4030 1C05 1210 A          BOC     CCZN,P21            ; BRANCH IF NO TIME AVAILIBLE
4031 1C06 8600 A          LD      AC1,(AC2)           ; AC1 = DURATION EI
4032 1C07 3100 A          RADD    AC0,AC1             ; AC1 = AVAILABLE TIME + DURATION EI
4033 1C08 A600 A          ST      AC1,(AC2)           ; DURATION EI = AC1
4034 1C09 E88E A          SKG     AC2,ATNTP
4035 1C0A 2105 A          JMP     .+6
4036 1C0B 9485 A          LD      AC1,@ATINT          ; AC1 = TIMER
4037 1C0C 3100 A          RADD    AC0,AC1             ; AC1 = ADJUSTED TIMER
4038 1C0D 9084 A          LD      AC0,@ATIN           ; AC0 = INTERVAL INDEX
4039 1C0E F302 A          SKNE    AC0,D2(AC3)
4040 1C0F 8485 A          ST      AC1,@ATINT
4041 1C10 4C19 A P20:     LI      AC0,DPRD            ; SET MINIMUM DURATION TIMER
4042 1C11 8075 A          ST      AC0,@APMDT
4043 1C12 B074 A          ST      AC0,@APFREQ
4044 1C13          ;
4045 1C13          ;                                 RESET WAIT FOR SYNCH START FLAG
4046 1C13 4C00 A          LI      AC0,C0
4047 1C14 B086 A          ST      AC0,@ATFST
4048 1C15          ;
4049 1C15 0200 A          RTS     D0                  ; RETURN FROM PREQ
4050 1C16          ;                                 UNABLE TO PROVIDE PREEMPT
4051 1C16 4C00 A P21:     LI      AC0,C0
4052 1C17 B06E A          ST      AC0,@APIP           ; CLEAR PIP FLAG
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4053 1C18 0200 A        RTS     DO                    ; RETURN FROM PREQ
4054 1C19          ;
4055 1C19          ;
4056 1C19          ;
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4059 1C19                .LIST   LVC
4060 1C19          VCLAS:
4061 1C19          ;                                   VEHICLE CLASSIFICATION
4062 1C19          ;                                   MAY 30 1975
4063 1C19          ;
4064 1C19 2100 A           JMP     .+1                      ; JSR @ACOTF MAY BE INSERTED HERE
4065 1C1A 9C7E A           LD      AC3,@AVCDT
4066 1C1B          ;                                   IS THE SPECIFIED DETECTOR IN RANGE
4067 1C1B ED66 A           SKG     AC3,VCHD
4068 1C1C ED66 A           SKG     AC3,VCLD
4069 1C1D 2154 A           JMP     VCER1
4070 1C1E          ;                                   LOCATE THIS DETECTOR'S PORTION OF SDB
4071 1C1E 4BFF A           AISZ    AC3,CM1
4072 1C1F 2100 A           JMP     .+1
4073 1C20 5F03 A           SHL     AC3,D3
4074 1C21 8880 A           LD      AC2,AVCSDB
4075 1C22 3F00 A           RADD    AC2,AC3
4076 1C23 887F A           LD      AC2,AVCDB
4077 1C24          ;                                   CHECK EOS STATUS REGISTER
4078 1C24 8307 A           LD      AC0,D7(AC3)
4079 1C25 1118 A           BOC     CCEZ,VCRET
4080 1C26          ;
4081 1C26          ;                                   ALL DATA FROM THE VEHICLE SIGNATURE DATA
4082 1C26          ;                                   BASE IS SCALED BO
4083 1C26          ;
4084 1C26          ;                                   COPY VEHICLE SIGNATURE DATA BASE
4085 1C26 8305 A           LD      AC0,D5(AC3)
4086 1C27 A205 A           ST      AC0,D5(AC2)
4087 1C28 8300 A           LD      AC0,D0(AC3)
4088 1C29 A200 A           ST      AC0,D0(AC2)
4089 1C2A 8301 A           LD      AC0,D1(AC3)
4090 1C2B A201 A           ST      AC0,D1(AC2)
4091 1C2C 8302 A           LD      AC0,D2(AC3)
4092 1C2D A202 A           ST      AC0,D2(AC2)
4093 1C2E 8303 A           LD      AC0,D3(AC3)
4094 1C2F A203 A           ST      AC0,D3(AC2)
4095 1C30 8304 A           LD      AC0,D4(AC3)
4096 1C31 A204 A           ST      AC0,D4(AC2)
4097 1C32 8306 A           LD      AC0,D6(AC3)
4098 1C33 A206 A           ST      AC0,D6(AC2)
4099 1C34          ;                                   RECHECK EOS STATUS REGISTER
4100 1C34 8307 A           LD      AC0,D7(AC3)
4101 1C35          ;                                   RESET EOS STATUS REGISTER
4102 1C35 4D00 A           LI      AC1,C0
4103 1C36 A707 A           ST      AC1,D7(AC3)
4104 1C37 1508 A           BOC     CCNZ,VC01
4105 1C38 9C7E A           LD      AC1,@AVCDT
4106 1C39 8C77 A           LD      AC3,APERR
4107 1C3A 2C4F A           JSR     @AERE6
4108 1C3B 8205 A           LD      AC0,D5(AC2)
4109 1C3C 1503 A           BOC     CCNZ,VC01
4110 1C3D 2C50 A           JSR     @AERE7
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4111 1C3E 4C01 A VCRET:  LI    AC0,C1
4112 1C3F 0200 A         RTS   D0                    ; RETURN FROM VCLAS
4113 1C40        ;                                 TEST FOR NOISE
4114 1C40 4C20 A VC01;   LI    AC0,32
4115 1C41 E200 A         SKG   AC0,D0(AC2)
4116 1C42 210A A         JMP   VC02
4117 1C43        ;                                 TOTAL TIME OF SIGNATURE TOO SHORT FOR VEHICLE
4118 1C43        ;                                 SIGNATURE ASSUMED TO BE NOISE
4119 1C43 947E A         LD    AC1,@AVCDT
4120 1C44 8C77 A         LD    AC3,APERR
4121 1C45 2C4E A         JSR   @AERE5
4122 1C46 4C01 A         LI    AC0,C1
4123 1C47 8C7D A         LD    AC3,AVCLOG
4124 1C48 7001 A         ISZ   D1(AC3)
4125 1C49 0200 A         RTS   D0                    ; RETURN FROM VCLAS
4126 1C4A 7000 A         ISZ   D0(AC3)
4127 1C4B 3081 A         NOP
4128 1C4C 0200 A         RTS   D0                    ; RETURN FROM VCLAS
4129 1C4D        ;                                 INCREMENT DETECTOR COUNTER
4130 1C4D        VC02:
4131 1C4D 4FFF A         LI    AC3,CM1
4132 1C4E 947E A         LD    AC1,@AVCDT
4133 1C4F 3700 A         RADD  AC1,AC3
4134 1C50 CC7C A         ADD   AC3,AVCVC
4135 1C51 7000 A         ISZ   D0(AC3)
4136 1C52 2100 A         JMP   .+1
4137 1C53        ;                                 GROSS TEST
4138 1C53 4C00 A         LI    AC0,C0
4139 1C54 E205 A         SKNE  AC0,D5(AC2)
4140 1C55 2115 A         JMP   VCGTF
4141 1C56        ;                                 CHECK MAGNITUDE OF SIGNATURE DATA
4142 1C56 812D A         LD    AC0,VCMA
4143 1C57 7201 A         SKAZ  AC0,D1(AC2)
4144 1C58 211D A         JMP   VCER2
4145 1C59 7203 A         SKAZ  AC0,D3(AC2)
4146 1C5A 211B A         JMP   VCER2
4147 1C5B 7205 A         SKAZ  AC0,D5(AC2)
4148 1C5C 2119 A         JMP   VCER2
4149 1C5D 8127 A         LD    AC0,VCMT
4150 1C5E 7200 A         SKAZ  AC0,D0(AC2)
4151 1C5F 211A A         JMP   VCER3
4152 1C60 7202 A         SKAZ  AC0,D2(AC2)
4153 1C61 2118 A         JMP   VCER3
4154 1C62 7204 A         SKAZ  AC0,D4(AC2)
4155 1C63 2116 A         JMP   VCER3
4156 1C64 7206 A         SKAZ  AC0,D6(AC2)
4157 1C65 2114 A         JMP   VCER3
4158 1C66        ;                                 CHECK FOR TIME OVERFLOW
4159 1C66 811F A         LD    AC0,VCMOF
4160 1C67 6200 A         AND   AC0,D0(AC2)
4161 1C68 F11D A         SKNE  AC0,VCMOF
4162 1C69 2152 A         JMP   VCHFE
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4163 1C6A 2127 A          JMP   VCDHK
4164 1C6B 4C01 A VCGTF:   LI    AC0,C1
4165 1C6C 8C7D A          LD    AC3,AVCLOG
4166 1C6D 7B03 A          ISZ   D3(AC3)
4167 1C6E 0200 A          RTS   D0                    ; RETURN FROM VCLAS
4168 1C6F 7B02 A          ISZ   D2(AC3)
4169 1C70 2100 A          JMP   .+1
4170 1C71 0200 A          RTS   D0                    ; RETURN FROM VCLAS
4171 1C72           VCER1:
4172 1C72           ;                                 DETECTOR SPECIFIED DOES NOT EXIST
4173 1C72 947E A          LD    AC1,@AVCDT
4174 1C73 8C77 A          LD    AC3,APERR
4175 1C74 2C4A A          JSR   @AERE1
4176 1C75 21C8 A          JMP   VCRET
4177 1C76           VCER2:
4178 1C76           ;                                 VEHICLE SIGNATURE DATA EXCEEDS BOUNDS (AMP)
4179 1C76 947E A          LD    AC1,@AVCDT
4180 1C77 8C77 A          LD    AC3,APERR
4181 1C78 2C4B A          JSR   @AERE2
4182 1C79 21C4 A          JMP   VCRET
4183 1C7A           VCER3:
4184 1C7A           ;                                 VEHICLE SIGNATURE DATA EXCEEDS BOUNDS (TIME)
4185 1C7A 947E A          LD    AC1,@AVCDT
4186 1C7B 8C77 A          LD    AC3,APERR
4187 1C7C 2C4C A          JSR   @AERE3
4188 1C7D 21C0 A          JMP   VCRET
4189 1C7E           VCER4:
4190 1C7E           ;                                 VEHICLE TIME DATA OUT OF ORDER
4191 1C7F 8C77 A          LD    AC3,APERR
4192 1C7F 947E A          LD    AC1,@AVCDT
4193 1C80 2C4D A          JSR   @AERE4
4194 1C81 21BC A          JMP   VCRET
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1C82                    .LIST   LVC
1C82            ;                                   DETECTOR INDEX RANGE
1C82 0004 A VCHD:       .WORD   DETS                    ; HIGHEST DETECTOR INDEX NUMBER EXPECTED
1C83 0000 A VCLD:       .WORD   0                       ; LOWEST DETECTOR INDEX NUMBER - 1
1C84            ;                                   MASKS
1C84 FF00 A VCMA:       .WORD   X'FF00                  ; MASK USED IN AMPLITUDE IN RANGE TEST
1C85 F000 A VCMT:       .WORD   X'F000                  ; MASK USED IN TIME IN RANGE TEST
1C86 0FFF A VCMOF:      .WORD   X'0FFF                  ; MASK USED IN TIME OVERFLOW TEST
1C87            ;                                   THE FOLLOWING ARE USED IN VCDHK
1C87 0028 A VCST1:      .WORD   40                      ; 2.50 B4       USED IN L2 TEST
1C88 0007 A VCST2:      .WORD   7                       ; 0.43 B4       USED IN L1 TEST
1C89 000B A VCST3:      .WORD   11                      ; 0.70 B4       USED IN L1 TEST
1C8A            ;                                   THE FOLLOWING ARE USED IN VCHFE
1C8A 2BAE A VC31:       .WORD   11182                   ; 2.730 B13     G1 COEFFICIENT FOR H1
1C8B 0E04 A VC32:       .WORD   3588                    ; 0.876 B13     G2 COEFFICIENT FOR H1
1C8C 2851 A VC41:       .WORD   10321                   ; 2.520 B13     G1 COEFFICIENT FOR H2
1C8D 0239 A VC42:       .WORD   569                     ; 0.139 B13     G2 COEFFICIENT FOR H2
1C8E 3EE1 A H1T1:       .WORD   16097                   ; 3.93 B13      H1 TEST LOWER BOUND
1C8F 6785 A H1T2:       .WORD   26501                   ; 6.47 B13      H1 TEST UPPER BOUND
1C90 3000 A H2T1:       .WORD   12288                   ; 3.00 B13      H2 TEST LOWER BOUND
1C91 5000 A H2T2:       .WORD   20480                   ; 5.00 B13      H2 TEST UPPER BOUND
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4220 1C92                .LIST  LVC
4221 1C92          VCDHK:
4222 1C92                ;                                  VEHICLE CLASSIFICATION  MOVING/STOPPED TEST
4223 1C92                ;
4224 1C92                ;                                  INSURE TIME DATA WORDS IN PROPER ORDER
4225 1C92 8204 A               LD      AC0,D4(AC2)
4226 1C93 E202 A               SKG     AC0,D2(AC2)
4227 1C94 21E9 A               JMP     VCER4
4228 1C95 8206 A               LD      AC0,D6(AC2)
4229 1C96 E204 A               SKG     AC0,D4(AC2)
4230 1C97 21E6 A               JMP     VCER4
4231 1C98 8200 A               LD      AC0,D0(AC2)
4232 1C99 E206 A               SKG     AC0,D6(AC2)
4233 1C9A 21E3 A               JMP     VCER4
4234 1C9B                ;                                  FORM T(C1) + T(C4) - T(C3)
4235 1C9B 8200 A               LD      AC0,D0(AC2)             ; AC0 = T(C4)
4236 1C9C D206 A               SUB     AC0,D6(AC2)             ; AC0 = T(C4) - T(C3)
4237 1C9D C202 A               ADD     AC0,D2(AC2)             ; AC0 = T(C4) - T(C3) + T(C1)
4238 1C9E A207 A               ST      AC0,D7(AC2)             ; B0
4239 1C9F                ;                                  FORM F0
4240 1C9F 8602 A               LD      AC1,D2(AC2)             ; B0
4241 1CA0 5D04 A               SHL     AC1,D4                  ; B4
4242 1CA1 4C00 A               LI      AC0,C0
4243 1CA2 C172 A               ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
4244 1CA3 0690 A               DIV     D7(AC2)                 ; B4
     1CA4 0007 A
4245 1CA5 2100 A               JMP     .+1
4246 1CA6                ;                                  CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
4247 1CA6                ;                                  JUMP TO VCHFE
4248 1CA6 074E A               SKSTF   D14
4249 1CA7 2101 A               JMP     .+2
4250 1CA8 2113 A               JMP     VCHFE
4251 1CA9                ;                                  AC1 = T(C1) / T(C1) + T(C4) - T(C3)
4252 1CA9                ;                                  VEHICLE IS CONSIDERED MOVING VEHICLE IF
4253 1CA9                ;                                  0.43 < F0 < 0.7
4254 1CA9 E5DE A               SKG     AC1,VCST2               ; SKIP IF AC1 > 0.43
4255 1CAA 2111 A               JMP     VCHFE
4256 1CAB E5DD A               SKG     AC1,VCST3               ; SKIP IF AC1 > 0.7
4257 1CAC F5DC A               SKNE    AC1,VCST3               ; SKIP IF AC1 NOT = 0.7
4258 1CAD 210E A               JMP     VCHFE                   ; JUMP TO STOPPED VEHICLE CLASSIFIER
4259 1CAE                ;                                  FORM F1 + F2
4260 1CAE 8606 A               LD      AC1,D6(AC2)             ; B0
4261 1CAF D602 A               SUB     AC1,D2(AC2)             ; AC1 = T(C3) - T(C1)
4262 1CB0 5D04 A               SHL     AC1,D4                  ; B4
4263 1CB1 4C00 A               LI      AC0,C0
4264 1CB2 C162 A               ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
4265 1CB3 0690 A               DIV     D7(AC2)                 ; B4
     1CB4 0007 A
4266 1CB5 2100 A               JMP     .+1
4267 1CB6                ;                                  CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
4268 1CB6                ;                                  JUMP TO VCHFE
4269 1CB6 074E A               SKSTF   D14
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4270 1CB7 2101 A        JMP     .+2
4271 1CB8 2103 A        JMP     VCHFE
4272 1CB9       ;                       AC1 = T(C3) - T(C1) / T(C1) + T(C4) - T(C3)
4273 1CB9       ;                       VEHICLE IS CONSIDERED STOPPED VEHICLE IF
4274 1CB9       ;                       F1 + F2 > 2.5
4275 1CB9 E5CD A        SKG     AC1,VCST1       ; SKIP IF AC1 > 2.5
4276 1CBA 2132 A        JMP     VCKFE           ; JUMP TO MOVING VEHICLE CLASSIFIER
4277 1CBB 2100 A        JMP     VCHFE
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1CBC                    .LIST   LVC
1CBC            ;                                   VEHICLE CLASSIFICATION
1CBC            ;                                   STOPPED VEHICLE CLASSIFIER
1CBC            VCHFE:
1CBC 8C7D A             LD      AC3,AVCLOG
1CBD 7B05 A             ISZ     D5(AC3)
1CBE 2102 A             JMP     .+3
1CBF 7B04 A             ISZ     D4(AC3)
1CC0 2100 A             JMP     .+1
1CC1            ;                                   INCREMENT STOPPED VEHICLE COUNTER
1CC1            ;                                   FORM C31 * A1
1CC1 85C8 A             LD      AC1,VC31                ; B13
1CC2 0680 A             MPY     D3(AC2)
1CC3 0003 A
1CC4 A208 A             ST      AC0,D8(AC2)
1CC5 A609 A             ST      AC1,D9(AC2)
1CC6            ;                                   FORM C32 * A2
1CC6 85C4 A             LD      AC1,VC32                ; B13
1CC7 0680 A             MPY     D5(AC2)
1CC8 0005 A
1CC9            ;                                   FORM (C31*A1 + C32*A2) / A0
1CC9 06A0 A             DADD    D8(AC2)                 ; B13
1CCA 0008 A
1CCB C149 A             ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
1CCC 0690 A             DIV     D1(AC2)                 ; B13
1CCD 0001 A
1CCE 2100 A             JMP     .+1
1CCF            ;                                   CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
1CCF            ;                                   JUMP TO VCNBS
1CCF 074E A             SKSTF   D14
1CD0 2101 A             JMP     .+2
1CD1 2552 A             JMP     @AVCVNB
1CD2            ;                                   IF VEHICLE IS NOT A BUS, JUMP TO VCVNB.
1CD2 E5BB A             SKG     AC1,H1T1                ; SKIP IF AC1 > 3.93
1CD3 2550 A             JMP     @AVCVNB
1CD4 E5BA A             SKG     AC1,H1T2                ; SKIP IF AC1 => 6.47
1CD5 2101 A             JMP     .+2
1CD6 254D A             JMP     @AVCVNB
1CD7            ;                                   FORM C41 * A1
1CD7 85B4 A             LD      AC1,VC41                ; B13
1CD8 0680 A             MPY     D3(AC2)
1CD9 0003 A
1CDA A208 A             ST      AC0,D8(AC2)
1CDB A609 A             ST      AC1,D9(AC2)
1CDC            ;                                   FORM C42 * A2
1CDC 85B0 A             LD      AC1,VC42                ; B13
1CDD 0680 A             MPY     D5(AC2)
1CDE 0005 A
1CDF            ;                                   FORM (C41*A1 + C42*A2) / A0
1CDF 06A0 A             DADD    D8(AC2)                 ; B13
1CE0 0008 A
1CE1 C133 A             ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
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4325 1CE2 0690 A          DIV     D1(AC2)          ; B13
     1CE3 0001 A
4326 1CE4 2100 A          JMP     .+1
4327 1CE5          ;                               CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
4328 1CE6          ;                               JUMP TO VCNBS
4329 1CE5 074E A          SKSTF   D14
4330 1CE6 2101 A          JMP     .+2
4331 1CE7 253C A          JMP     @AVCVNB
4332 1CE8          ;                               IF VEHICLE IS NOT A BUS, JUMP TO VCVNB
4333 1CE8 E5A7 A          SKG     AC1,H2T1         ; SKIP IF AC1 > 3.0
4334 1CE9 253A A          JMP     @AVCVNB
4335 1CEA E5A6 A          SKG     AC1,H2T2         ; SKIP IF AC1 > 5.0
4336 1CEB 2537 A          JMP     @AVCBUS
4337 1CEC 2537 A VCHE:    JMP     @AVCVNB
```

```
1CFD                    .LIST   LVC
1CFD            ;                                   VEHICLE CLASSIFICATION
1CFD            ;                                   MOVING VEHICLE CLASSIFIER
1CFD            ;                                       BIT 13 = 1.0
1CFD            VCKFE:
1CFD 8C7D A             LD      AC3,AVCLOG
1CFE 7B07 A             ISZ     D7(AC3)
1CFF 2102 A             JMP     .+3
1CF0 7306 A             ISZ     D6(AC3)
1CF1 2100 A             JMP     .+1
1CF2 8D21 A             LD      AC3,VCCP
1CF3 4C00 A             LI      AC0,C0
1CF4 A20C A             ST      AC0,D12(AC2)
1CF5 A20F A             ST      AC0,D15(AC2)
1CF6            VCK:
1CF6            ;                                   FORM C4*A2 = G2'
1CF6 8704 A             LD      AC1,D4(AC3)             ; B13
1CF7 0680 A             MPY     D5(AC2)
1CF8 0005 A
1CF9 A208 A             ST      AC0,D8(AC2)
1CFA A609 A             ST      AC1,D9(AC2)
1CFB            ;                                   FORM C3*A1 = G1'
1CFB 8703 A             LD      AC1,D3(AC3)             ; B13
1CFC 0680 A             MPY     D3(AC2)
1CFD 0003 A
1CFE A20A A             ST      AC0,D10(AC2)
1CFF A60B A             ST      AC1,D11(AC2)
1D00            ;                                   FORM ABS(G1' - G2') / A0
1D00 F208 A             SKNE    AC0,D8(AC2)             ; SKIP IF UPPER G1' NOT = UPPER G2'
1D01 2103 A             JMP     .+4
1D02 E208 A             SKG     AC0,D8(AC2)             ; SKIP IF UPPER G1' > UPPER G2'
1D03 212F A             JMP     VCK3
1D04 2122 A             JMP     VCK21
1D05 651C A             AND     AC1,VCM15
1D06 F51B A             SKNE    AC1,VCM15               ; SKIP IF BIT 15 IS NOT SET
1D07 2108 A             JMP     VCK1
1D08 8519 A             LD      AC1,VCM15
1D09 6609 A             AND     AC1,D9(AC2)
1D0A F517 A             SKNE    AC1,VCM15               ; SKIP IF BIT 15 IS NOT SET
1D0B 2127 A             JMP     VCK3
1D0C 860B A VCK0:       LD      AC1,D11(AC2)
1D0D E609 A             SKG     AC1,D9(AC2)             ; SKIP IF LOWER G1' > LOWER G2'
1D0E 2124 A             JMP     VCK3
1D0F 2116 A             JMP     VCK2
1D10 6609 A VCK1:       AND     AC1,D9(AC2)
1D11 F510 A             SKNE    AC1,VCM15
1D12 21F9 A             JMP     VCK0
1D13 2112 A             JMP     VCK2
```

```
4388 1D14                    .LIST   LVC
4389 1D14 1D15 A VCCP:       .WORD   VCC0
4390 1D15        ;                                THE FOLLOWING IS USED TO CLEAR THE OVERFLOW
4391 1D15        ;                                STATUS BIT BEFORE EACH DIVIDE OPERATION
4392 1D15 0000 A VCC0:       .WORD   0
4393 1D16        ;                                THE FOLLOWING ARE USED IN VCKFE
4394 1D16 046E A             .WORD   1134             ; 0.277 B13    F1 COEFFICIENT FOR K4
4395 1D17 0051 A             .WORD   81               ; 0.0198 B13   F2 COEFFICIENT FOR K4
4396 1D18 03A5 A             .WORD   933              ; 0.228 B13    G1 COEFFICIENT FOR K4
4397 1D19 0F26 A             .WORD   3878             ; 0.947 B13    G2 COEFFICIENT FOR K4
4398 1D1A 0000 A             .WORD   0
4399 1D1B 1028 A             .WORD   4136             ; 1.01 B13     K4 BIAS
4400 1D1C        ;
4401 1D1C 1A8F A             .WORD   6799             ; 1.66 B13     F1 COEFFICIENT FOR K5
4402 1D1D 15C2 A             .WORD   5570             ; 1.36 B13     F2 COEFFICIENT FOR K5
4403 1D1E 2288 A             .WORD   8888             ; 2.17 B13     G1 COEFFICIENT FOR K5
4404 1D1F 4199 A             .WORD   16793            ; 4.10 B13     G2 COEFFICIENT FOR K5
4405 1D20 0000 A             .WORD   0
4406 1D21 1F1A A             .WORD   7962             ; 1.944 B13    K5 BIAS
4407 1D22        ;                                MASK
4408 1D22 8000 A VCM15:      .WORD   X'8000           ; MASK FOR DOUBLE PRECISION COMPARISIONS
4409 1D23 1D92 A AVCBUS:     .WORD   VCBUS            ; POINTER TO VEHICLE IS BUS ROUTINE
4410 1D24 1D98 A AVCVNB:     .WORD   VCVNB            ; POINTER TO VEHICLE NOT BUS ROUTINE
4411 1D25 1DA2 A AVCER:      .WORD   VCER             ; POINTER TO OVERFLOW ERROR ROUTINE
```

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1D26                .LIST   LVC
1D26          ;                                   G1' > G2'
1D26 860B A VCK2:   LD      AC1,D11(AC2)
1D27 06B0 A VCK21:  DSUB    D8(AC2)                 ; B13     FORM G1' - G2'
1D28 0008 A
1D29 C1EB A         ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
1D2A 0690 A         DIV     D1(AC2)                 ; FORM (G1' - G2') / A0
1D2B 0001 A
1D2C          ;                                   CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
1D2C          ;                                   JUMP TO VCER
1D2C 074E A         SKSTF   D14
1D2D 2101 A         JMP     .+2
1D2E 25F6 A         JMP     @AVCER
1D2F A60D A         ST      AC1,D13(AC2)
1D30 4C00 A         LI      AC0,C0
1D31 A20C A         ST      AC0,D12(AC2)
1D32 210F A         JMP     VCK5
1D33          ;                                   G1' < G2'
1D33 8208 A VCK3:   LD      AC0,D8(AC2)             ; B13
1D34 8609 A         LD      AC1,D9(AC2)
1D35 06B0 A         DSUB    D10(AC2)                ; FORM (G2' - G1') / A0
1D36 000A A
1D37 C1DD A         ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
1D38 0690 A         DIV     D1(AC2)                 ; FORM (G2' - G1') / A0
1D39 0001 A
1D3A          ;                                   CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
1D3A          ;                                   JUMP TO VCER
1D3A 074E A         SKSTF   D14
1D3B 2101 A         JMP     .+2
1D3C 25E8 A         JMP     @AVCER
1D3D          ;                                   CONVERT QUOTIENT TO NEGATIVE AND STORE
1D3D 5101 A         CAI     AC1,C1
1D3E A60D A         ST      AC1,D13(AC2)
1D3F 4C00 A         LI      AC0,C0
1D40 5000 A         CAI     AC0,C0
1D41 A20C A         ST      AC0,D12(AC2)
1D42          ;                                   FORM C11*(T(C2) - T(C1))
1D42 8604 A VCK5:   LD      AC1,D4(AC2)             ; B0
1D43 D602 A         SUB     AC1,D2(AC2)
1D44 0780 A         MPY     D1(AC3)                 ; B13
1D45 0001 A
1D46 A208 A         ST      AC0,D8(AC2)
1D47 A609 A         ST      AC1,D9(AC2)
1D48          ;                                   FORM C12 * (T(C3) - T(C2))  = F2'
1D48 8606 A         LD      AC1,D6(AC2)
1D49 D604 A         SUB     AC1,D4(AC2)
1D4A 0780 A         MPY     D2(AC3)
1D4B 0002 A
1D4C A20A A         ST      AC0,D10(AC2)
1D4D A60B A         ST      AC1,D11(AC2)
1D4E          ;                                   FORM ABS(F2' - F1')
1D4E F209 A         SKNE    AC0,D8(AC2)             ; SKIP IF UPPER F2' NOT = UPPER F1'
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4460 1D4F 2103 A          JMP     .+4
4461 1D50 E208 A          SKG     AC0,D8(AC2)          ; SKIP IF UPPER F2' > UPPER F1'
4462 1D51 2125 A          JMP     VCK9
4463 1D52 210E A          JMP     VCK8
4464 1D53 65CE A          AND     AC1,VCM15
4465 1D54 F5CD A          SKNE    AC1,VCM15            ; SKIP IF BIT 15 NOT SET
4466 1D55 2108 A          JMP     VCK7
4467 1D56 85CE A          LD      AC1,VCM15
4468 1D57 6609 A          AND     AC1,D9(AC2)
4469 1D58 F5C9 A          SKNE    AC1,VCM15            ; SKIP IF BIT 15 NOT SET
4470 1D59 211D A          JMP     VCK9
4471 1D5A 860B A VCK6:    LD      AC1,D11(AC2)
4472 1D5B E609 A          SKG     AC1,D9(AC2)          ; SKIP IF LOWER F2' > LOWER F1'
4473 1D5C 211A A          JMP     VCK9
4474 1D5D 2103 A          JMP     VCK8
4475 1D5E 6609 A VCK7:    AND     AC1,D9(AC2)
4476 1D5F F5C2 A          SKNE    AC1,VCM15
4477 1D60 21F9 A          JMP     VCK6
4478 1D61         ;                                    F2' > F1'
4479 1D61 4D00 A VCK8:    LI      AC1,C0               ; B0
4480 1D62 F60C A          SKNE    AC1,D12(AC2)         ; SKIP IF G2' - G1' NEGATIVE
4481 1D63 2137 A          JMP     VCVNB                ; OTHERWISE JUMP TO NON-BUS ROUTINE
4482 1D64 820A A          LD      AC0,D10(AC2)         ; B13
4483 1D65 860B A          LD      AC1,D11(AC2)
4484 1D66 06B0 A          DSUB    D8(AC2)
     1D67 0008 A
4485 1D68 C1AC A          ADD     AC0,VCC0             ; CLEAR OVERFLOW STATUS BIT
4486 1D69 0690 A          DIV     D7(AC2)
     1D6A 0007 A
4487 1D6B         ;                                    CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
4488 1D6B         ;                                    JUMP TO/VCER
4489 1D6B 074E A          SKSTF   D14
4490 1D6C 2101 A          JMP     .+2
4491 1D6D 25B7 A          JMP     @AVCER
4492 1D6E 4C00 A          LI      AC0,C0
4493 1D6F 06A0 A          DADD    D12(AC2)
     1D70 000C A
4494 1D71 3081 A          NOP
4495 1D72 07A0 A          DADD    D5(AC3)
     1D73 0005 A
4496 1D74 2100 A          JMP     .+1
4497 1D75 1225 A          BOC     CCZP,VCVNB           ; IF RESULTS =>0, JUMP TO NON-BUS ROUTINE
4498 1D76 2114 A          JMP     VCNK
4499 1D77         ;                                    F2' < F1'
4500 1D77 8208 A VCK9:    LD      AC0,D8(AC2)          ; B13
4501 1D78 8609 A          LD      AC1,D9(AC2)
4502 1D79 06B0 A          DSUB    D10(AC2)
     1D7A 000A A
4503 1D7B C199 A          ADD     AC0,VCC0             ; CLEAR OVERFLOW STATUS BIT
4504 1D7C 0690 A          DIV     D7(AC2)
     1D7D 0007 A
4505 1D7E         ;                                    CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
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1D7E          ;                                    JUMP TO VCER
1D7E 074E A          SKSTF   D14
1D7F 2101 A          JMP     .+2
1D80 25A4 A          JMP     @AVCER
1D81 A610 A          ST      AC1,D16(AC2)
1D82 4C00 A          LI      AC0,C0
1D83 8706 A          LD      AC1,D6(AC3)
1D84 06B0 A          DSUB    D15(AC2)
1D85 000F A
1D86 3081 A          NOP
1D87 06A0 A          DADD    D12(AC2)
1D88 000C A
1D89 2100 A          JMP     .+1
1D8A 1210 A          BOC     CCZP,VCVNB              ; IF RESULTS =>0, JUMP TO NON-BUS ROUTINE
1D8B          VCNK:
1D8B FD88 A          SKNE    AC3,VCCP                ; B0
1D8C 2101 A          JMP     .+2
1D8D 2104 A          JMP     VCBUS
1D8E 4C06 A          LI      AC0,C6
1D8F 3300 A          RADD    AC0,AC3
1D90 2500 A          JMP     @AVCK
1D91 1CF6 A AVCK:    .WORD   VCK
```

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4528 1D92                          .LIST   LVC
4529 1D92 4C00 A VCBUS:  LI        AC0,C0
4530 1D93 4D19 A         LI        AC1,DPMD          ; AC0 = PREEMPT MINIMUM DURATION
4531 1D94 847B A         ST        AC1,@AVCBT
4532 1D95 8C7D A         LD        AC3,AVCLOG
4533 1D96 7709 A         ISZ       D9(AC3)
4534 1D97 0200 A         RTS       D0
4535 1D98 7708 A         ISZ       D8(AC3)
4536 1D99 2100 A         JMP       .+1
4537 1D9A 0200 A         RTS       D0
4538 1D9B 4C01 A VCVNB:  LI        AC0,C1
4539 1D9C 8C7D A         LD        AC3,AVCLOG
4540 1D9D 770B A         ISZ       D11(AC3)
4541 1D9E 0200 A         RTS       D0
4542 1D9F 770A A         ISZ       D10(AC3)
4543 1DA0 2100 A         JMP       .+1
4544 1DA1 0200 A         RTS       D0
4545 1DA2          VCER:
4546 1DA2          ;                          ERROR DETECTED   OVERFLOW ON DIVIDE
4547 1DA2 947E A         LD        AC1,@AVCDT
4548 1DA3 8C77 A         LD        AC3,APERR
4549 1DA4 2C49 A         JSR       @AERE0
4550 1DA5 4C01 A         LI        AC0,C1
4551 1DA6 0200 A         RTS       D0
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4552 1DA7                .PAGE
4553 1DA7                .ASECT
4554 1DA7 1E00 A         .=X'1E00
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 4557 1E00                .LIST   LFB
 4558 1E00        ;
 4559 1E00        ;                   ... BACKGROUND PROGRAMS ...
 4560 1E00        EBKD:
 4561 1E00        ;
 4562 1E00        ;                   ... RAM ADDRESS TEST ...
 4563 1E00 80D6 A EBKD1:  LD      AC0,ADEND       ; START ADDRESS
 4564 1E01 80D4 A         ST      AC0,@ASSAD
 4565 1E02 80F6 A         LD      AC0,H3FFF       ; END ADDRESS
 4566 1E03 80D5 A         ST      AC0,@ASEAD
 4567 1E04        ;
 4568 1E04 2C5A A         JSR     @ASMAD
 4569 1E05 2104 A         JMP     EBKDE           ; ERROR RETURN, (AC2) = CONTENTS
 4570 1E06                                        ;                (AC3) = ADDRESS
 4571 1E06 2100 A         JMP     .+1             ; NO ERROR RETURN
 4572 1E07        ;
 4573 1E07 0744 A         SKSTF   D4              ; SKIP IF STATUS IS SET
 4574 1E08 21F7 A         JMP     EBKD1           ; RESTART RAM ADDRESS TEST
 4575 1E09 2100 A         JMP     EBKDE           ; JUMP IF ERROR
 4576 1E0A        ;
 4577 1E0A        ;                   ... ERROR, TERMINAL WAIT LOOP ...
 4578 1E0A 2100 A EBKDE:  JMP     .+1             ; WAIT FOR MONITOR ROUTINE TO INITIATE
 4579 1E0B 21FE A         JMP     .-1             ;    ERROR RESPONSE
```

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4582 1E0C                  .LIST   LEB
4583 1E0C          ;
4584 1E0C          ;                  ... RAM ADDRESS TEST ...
4585 1E0C 4CFF A SMAD:    LI       AC0,CM1          ; CLEAR ERROR COUNTER
4586 1E0D 88D5 A          LD       AC2,ASEAD        ; POINTER TO END ADDRESS
4587 1E0E 9CD4 A          LD       AC3,@ASSAD       ; START ADDRESS
4588 1E0F          ;
4589 1E0F AF00 A SMAD1:   ST       AC3,(AC3)        ; STORE ADDRESS AT EACH LOCATION
4590 1E10 4801 A          AISZ     AC3,C1           ; INCREMENT ADDRESS
4591 1E11 EE00 A          SKG      AC3,(AC2)        ; SKIP IF DONE
4592 1E12 21FC A          JMP      SMAD1
4593 1E13          ;
4594 1E13 9CD4 A          LD       AC3,@ASSAD       ; START ADDRESS
4595 1E14 FF00 A SMAD2:   SKNE     AC3,(AC3)        ; SKIP IF MISMATCH
4596 1E15 2106 A          JMP      SMAD3            ; MATCH, CONTENTS = ADDRESS
4597 1E16 4801 A          AISZ     AC0,C1           ; SKIP IF FIRST ERROR
4598 1E17 1301 A          BOC      CCB0,SMADE       ; BRANCH IF SECOND ERROR
4599 1E18 21FB A          JMP      SMAD2            ; CONTINUE LOOP
4600 1E19          ;
4601 1E19          ;                  ... TWO CONSECUTIVE ADDRESS ERRORS ...
4602 1E19 8B00 A SMADE:   LD       AC2,(AC3)        ; GET ERRONEOUS CONTENTS
4603 1E1A 0704 A          SETST    D4               ; SET STATUS FLAG 4
4604 1E1B 0200 A          RTS      D0               ; RETURN FROM SMAD (ERROR)
4605 1E1C          ;
4606 1E1C 4CFF A SMAD3:   LI       AC0,CM1          ; CLEAR ERROR COUNTER
4607 1E1D 4B01 A          AISZ     AC3,C1           ; INCREMENT ADDRESS
4608 1E1E EE00 A          SKG      AC3,(AC2)        ; SKIP IF DONE
4609 1E1F 21F4 A          JMP      SMAD2            ; CONTINUE LOOP
4610 1E20 0201 A          RTS      D1               ; RETURN FROM SMAD (NO ERROR)
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4611 1E21                    .PAGE
4612 1E21                    .ASECT
4613 1E21 1F00 A             .=X'1F00
4614 1F00          ;
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 4617 1F00                .LIST   LBX
 4618 1F00        ;                  ... D A T A   I N P U T   C P C ...
 4619 1F00        ;
 4620 1F00        ;                  ... DATA INPUT FOR RTC SEQUENCE ...
 4621 1F00        ;
 4622 1F00 8CE3 A BRTC:   LD      AC3,ATCP        ; INPUT AND SAVE DISCRETE INPUT WORD
 4623 1F01 8868 A         LD      AC2,ABBUF
 4624 1F02 0403 A         RIN     FC3
 4625 1F03 A200 A         ST      AC0,D0(AC2)
 4626 1F04 8CE0 A         LD      AC3,ALDU        ; INPUT AND SAVE COMMAND REGISTERS
 4627 1F05 0403 A         RIN     FC3
 4628 1F06 A201 A         ST      AC0,D1(AC2)
 4629 1F07 0404 A         RIN     FC4
 4630 1F08 A202 A         ST      AC0,D2(AC2)
 4631 1F09        ;
 4632 1F09 8CE9 A         LD      AC3,APPDU       ; INPUT AND SAVE PROG. PANEL DISCRETES
 4633 1F0A 0403 A         RIN     FC3
 4634 1F0B B0BB A         ST      AC0,@ABPPD
 4635 1F0C 0200 A         RTS     D0
 4636 1F0D        ;
 4637 1F0D        ;
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4640 1F0D                  .LIST   LBX
4641 1F0D          ;
4642 1F0D          ;                  ... DATA INPUT FROM PROG. PANEL ...
4643 1F0D          ;                      (THUMBWHEEL SWITCH DATA ONLY)
4644 1F0D          ;
4645 1F0D          ;                  ... THIS ROUTINE IS EXECUTED DURING RESTART
4646 1F0D          ;                         INITIALIZATION AND THEREAFTER ONLY UPON INPUT
4647 1F0D          ;                         REQUEST VIA THE PROG PANEL PUSHBUTTON ...
4648 1F0D          ;
4649 1F0D 88BB A BPAN:  LD      AC2,ABPPD       ; BASE ADDRESS OF INPUT DATA BUFFER
4650 1F0E 8CEA A        LD      AC3,APP1U       ; PLAN 1 PERIPHERAL DEVICE ADDRESS
4651 1F0F 2909 A        JSR     BPIN            ; READ AND SAVE PARAMETER SWITCH DATA
4652 1F10          ;
4653 1F10 4A07 A        AISZ    AC2,C7          ; INCREMENT BY LENGTH OF BUFFER
4654 1F11 2100 A        JMP     .+1
4655 1F12 8CEB A        LD      AC3,APP2U       ; PLAN 2 PERIPHERAL DEVICE ADDRESS
4656 1F13 2905 A        JSR     BPIN            ; READ AND SAVE PARAMETER SWITCH DATA
4657 1F14          ;
4658 1F14 4A07 A        AISZ    AC2,C7          ; INCREMENT BY LENGTH OF BUFFER
4659 1F15 2100 A        JMP     .+1
4660 1F16 8CEC A        LD      AC3,APP3U       ; PLAN 3 PERIPHERAL DEVICE ADDRESS
4661 1F17 2901 A        JSR     BPIN            ; READ AND SAVE PARAMETER SWITCH DATA
4662 1F18          ;
4663 1F18 0200 A        RTS     D0              ; RETURN FROM BPAN
4664 1F19          ;
4665 1F19          ;                  ... INPUT A SET OF PROG. PANEL PARAMETER SWITCHES ...
4666 1F19          ;                         (AC2) = BASE ADDRESS OF DATA BUFFER
4667 1F19          ;                         (AC3) = PERIPHERAL DEVICE ADDRESS
4668 1F19 0411 A BPIN:  RIN     FC11
4669 1F1A A201 A        ST      AC0,D1(AC2)
4670 1F1B 0412 A        RIN     FC12
4671 1F1C A202 A        ST      AC0,D2(AC2)
4672 1F1D 0413 A        RIN     FC13
4673 1F1E A203 A        ST      AC0,D3(AC2)
4674 1F1F 0414 A        RIN     FC14
4675 1F20 A204 A        ST      AC0,D4(AC2)
4676 1F21 0415 A        RIN     FC15
4677 1F22 A205 A        ST      AC0,D5(AC2)
4678 1F23 0410 A        RIN     FC10
4679 1F24 A206 A        ST      AC0,D6(AC2)
4680 1F25 0417 A        RIN     FC17
4681 1F26 A207 A        ST      AC0,D7(AC2)
4682 1F27          ;
4683 1F27 0200 A        RTS     D0              ; RETURN FROM BPIN
4684 1F28          ;
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4687 1F28                .LIST   LBX
4688 1F28        ;                  ... D A T A   O U T P U T   C P C ...
4689 1F28        ;
4690 1F28        ;                  ... DATA OUTPUT FOR RTC SEQUENCE ...
4691 1F28 8CE0 A XRTC:   LD      AC3,ALDU
4692 1F29 886B A         LD      AC2,AXBUF
4693 1F2A 8201 A         LD      AC0,D1(AC2)
4694 1F2B 0601 A         ROUT    FC1             ; OUTPUT COMMAND WORD 1
4695 1F2C 8202 A         LD      AC0,D2(AC2)
4696 1F2D 0602 A         ROUT    FC2             ; OUTPUT COMMAND WORD 2
4697 1F2E 8CE4 A         LD      AC3,ASDU
4698 1F2F 8200 A         LD      AC0,D0(AC2)
4699 1F30 0601 A         ROUT    FC1             ; OUTPUT STATUS DISPLAY WORD
4700 1F31 0200 A         RTS     D0
4701 1F32        ;
4702 1F32 8CE0 A XWDT:   LD      AC3,ALDU
4703 1F33 4C00 A         LI      AC0,C0
4704 1F34 0641 A         ROUT    FC41            ; RESET CONTROL PULSE FOR DWELL TIMER
4705 1F35 0200 A         RTS     D0
4706 1F36        ;
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4709 1F36                .LIST   LBX
4710 1F36        ;
4711 1F36        ;                   ...FORMAT OUTPUT COMMAND WORDS ...
4712 1F36 8881 A XSDC:   LD      AC2,ATBUF
4713 1F37 8200 A         LD      AC0,D0(AC2)     ; FETCH COMMAND INDEX WORD
4714 1F38 1512 A         BOC     CCNZ,XFOW       ; TEST FOR NON-ZERO WORD FOR NEW COMMAND
4715 1F39 90A0 A         LD      AC0,@AECMF      ; COMMAND FEEDBACK ERROR FLAG
4716 1F3A 1508 A         BOC     CCNZ,XCER       ; BRANCH IF ERROR
4717 1F3B        ;                   ... (INSERT ADDITIONAL TESTS HERE)
4718 1F3B 886B A         LD      AC2,AXBUF
4719 1F3C 8201 A         LD      AC0,D1(AC2)
4720 1F3D 60F0 A         AND     AC0,H7FFF       ; CLEAR UPDATE BIT IN COMMAND WORD 1
4721 1F3E A201 A         ST      AC0,D1(AC2)
4722 1F3F 8202 A         LD      AC0,D2(AC2)
4723 1F40 60F0 A         AND     AC0,H7FFF       ; CLEAR UPDATE BIT IN COMMAND WORD 2
4724 1F41 A202 A         ST      AC0,D2(AC2)
4725 1F42 0200 A         RTS     D0
4726 1F43        ;                   ... COMMAND ERROR, SET UPDATE BIT FOR NEXT OUTPUT ...
4727 1F43 886B A XCER:   LD      AC2,AXBUF
4728 1F44 8201 A         LD      AC0,D1(AC2)     ; XOCW1
4729 1F45 60F0 A         AND     AC0,H7FFF       ; CLEAR UPDATE BIT
4730 1F46 A201 A         ST      AC0,D1(AC2)
4731 1F47 8202 A         LD      AC0,D2(AC2)     ; XOCW2
4732 1F48 072F A         SETBIT  D15             ; SET UPDATE BIT
4733 1F49 A202 A         ST      AC0,D2(AC2)
4734 1F4A 0200 A         RTS     D0
4735 1F4B        ;
4736 1F4B        ;                   ... FORMAT NEW OUTPUT COMMAND WORDS ...
4737 1F4B 6137 A XFOW:   AND     AC0,H7F00       ; EXTRACT MAIN STREET COMMAND INDEX
4738 1F4C 5CF8 A         SHR     AC0,D8          ; SHIFT TO LOWER BITS
4739 1F4D 1102 A         BOC     CCEZ,XMCE
4740 1F4E E147 A         SKG     AC0,XIMX        ; TEST FOR VALID INDEX (1 TO XIMX)
4741 1F4F 210C A         JMP     XF01
4742 1F50        ;
4743 1F50        ;                   ... INVALID MAIN STREET COMMAND INDEX ...
4744 1F50 8881 A XMCE:   LD      AC2,ATBUF
4745 1F51 8200 A         LD      AC0,D0(AC2)     ; FETCH COMMAND INDEX WORD
4746 1F52 886C A         LD      AC2,AXERR
4747 1F53 A202 A         ST      AC0,D2(AC2)     ; STORE IN ERROR BUFFER, XERR0
4748 1F54 8201 A         LD      AC0,D1(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
4749 1F55 4801 A         AISZ    AC0,C1
4750 1F56 2100 A         JMP     .+1
4751 1F57 A201 A         ST      AC0,D1(AC2)
4752 1F58 8200 A         LD      AC0,D0(AC2)
4753 1F59 0720 A         SETBIT  D0              ; SET ERROR FLAG BIT 0
4754 1F5A A200 A         ST      AC0,D0(AC2)
4755 1F5B 0200 A         RTS     D0
4756 1F5C        ;
4757 1F5C 8D27 A XF01:   LD      AC3,AXCFT       ; FETCH ADDRESS OF COMMAND FORMAT TABLE
4758 1F5D 3200 A         RADD    AC0,AC3         ; ADD COMMAND INDEX
4759 1F5E 8300 A         LD      AC0,(AC3)       ; FETCH COMMAND FORMAT
4760 1F5F 8C6B A         LD      AC3,AXBUF
```

```
4761 1F60 A301 A          ST      AC0,D1(AC3)     ; STORE IN XOCW1
4762 1F61          ;
4763 1F61 8200 A          LD      AC0,D0(AC2)     ; FETCH COMMAND INDEX WORD
4764 1F62 611F A          AND     AC0,H007F       ; EXTRACT CROSS STREET INDEX
4765 1F63 1102 A          BOC     CCEZ,XCCE
4766 1F64 E131 A          SKG     AC0,XIMX        ; TEST FOR VALID INDEX (1 TO XIMX)
4767 1F65 210C A          JMP     XFO2
4768 1F66          ;
4769 1F66          ;                  ... INVALID CROSS STREET COMMAND INDEX ...
4770 1F66 8881 A XCCE:    LD      AC2,ATBUF
4771 1F67 8200 A          LD      AC0,D0(AC2)     ; FETCH COMMAND INDEX WORD
4772 1F68 886C A          LD      AC2,AXERR
4773 1F69 A204 A          ST      AC0,D4(AC2)     ; STORE IN ERROR BUFFER, XERR1
4774 1F6A 8203 A          LD      AC0,D3(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
4775 1F6B 4801 A          AISZ    AC0,C1
4776 1F6C 2100 A          JMP     .+1
4777 1F6D A203 A          ST      AC0,D3(AC2)
4778 1F6E 8200 A          LD      AC0,D0(AC2)
4779 1F6F 0721 A          SETBIT  D1              ; SET ERROR FLAG BIT 1
4780 1F70 A200 A          ST      AC0,D0(AC2)
4781 1F71 0200 A          RTS     D0
4782 1F72          ;
4783 1F72 8011 A XFO2:    LD      AC3,AXCFT       ; FETCH ADDRESS OF COMMAND FORMAT TABLE
4784 1F73 3300 A          RADD    AC0,AC3         ; ADD COMMAND INDEX
4785 1F74 8300 A          LD      AC0,(AC3)       ; FETCH COMMAND FORMAT
4786 1F75 072F A          SETBIT  D15             ; SET UPDATE BIT
4787 1F76 8C6B A          LD      AC3,AXBUF
4788 1F77 A302 A          ST      AC0,D2(AC3)     ; STORE IN XOCW2
4789 1F78          ;
4790 1F78 8881 A          LD      AC2,ATBUF
4791 1F79 8C6B A          LD      AC3,AXBUF
4792 1F7A 8303 A          LD      AC0,D3(AC3)     ; FETCH CURRENT AND STORE IN PREVIOUS
4793 1F7B A304 A          ST      AC0,D4(AC3)     ;    COMMAND INDEX WORD
4794 1F7C 8200 A          LD      AC0,D0(AC2)     ; FETCH AND SAVE CURRENT COMMAND
4795 1F7D A303 A          ST      AC0,D3(AC3)     ;    INDEX WORD
4796 1F7E 4C00 A          LI      AC0,C0
4797 1F7F A200 A          ST      AC0,D0(AC2)          ; ZERO COMMAND INDEX WORD(TCIWC)
4798 1F80 0200 A          RTS     D0
4799 1F81          ;
4800 1F81          ;                  ... LOCAL DATA ...
4801 1F81 0006 A H0006:   .WORD   X'0006          ; HEX CONSTANT (BITS 1,2 SET)
4802 1F82 007F A H007F:   .WORD   X'007F          ; HEX CONSTANT (BITS 15 - 8 RESET)
4803 1F83 7F00 A H7F00:   .WORD   X'7F00          ; HEX CONSTANT (BITS 15 AND 7 - 0 RESET)
4804 1F84          ;
```

```
 4807 1F84                      .LIST   LBX
 4808 1F84              ;
 4809 1F84              ;                       ... COMMAND FORMAT TABLE ...
 4810 1F84 1F84 A AXCFT:  .WORD   XCFT-1
 4811 1F85              XCFT:
 4812 1F85              ;                                                 L
 4813 1F85              ;                                                 T           S
 4814 1F85              ;                                                             E
 4815 1F85              ;                                                 P   S       C   P
 4816 1F85              ;                                             U   R   P       O   R
 4817 1F85              ;                                             P   I   E       N   I
 4818 1F85              ;                                             D   M   C       D   M
 4819 1F85              ;                                             A   A   I   P   A   A
 4820 1F85              ;                                             T   R   A   E   R   R
 4821 1F85              ;                                             E   Y   L   D   Y   Y
 4822 1F85              ;
 4823 1F85              ;                                                     C   C   C   C
 4824 1F85              ;                                                     LS  LS  LS  LS
 4825 1F85              ;                                                     ET  ET  ET  ET
 4826 1F85              ;                                         COMMAND     GG GAO GAO GAO GAO
 4827 1F85              ;                                          INDEX      00 ORP ORP ORP ORP
 4828 1F85              ;
 4829 1F85              ;                                                  BITS SET = 1 (CIRCUITS ON)
 4830 1F85              ;                                                 1 111 11
 4831 1F85              ;                                                 5 432 109 876 543 210
 4832 1F85              ;
 4833 1F85              ;       ... PBD33J ...
 4834 1F85 0249 A               .WORD   X'0249          ; 1             S   S   S   S
 4835 1F86 0324 A               .WORD   X'0324          ; 2             S G   G   G       G GO
 4836 1F87 02A4 A               .WORD   X'02A4          ; 3             S C   G   G       C CLEAR
 4837 1F88 0264 A               .WORD   X'0264          ; 4             S   S G   G       S STOP
 4838 1F89 0252 A               .WORD   X'0252          ; 5             S   S   C   C
 4839 1F8A              ;
 4840 1F8A              ;       ... PBD14C ...
 4841 1F8A 1124 A               .WORD   X'1124          ; 6           G     G   G   G
 4842 1F8B 10A4 A               .WORD   X'10A4          ; 7           G       C G   G
 4843 1F8C 1094 A               .WORD   X'1094          ; 8           G       C   C G
 4844 1F8D 304C A               .WORD   X'304C          ; 9           GG        S   S G
 4845 1F8E 044A A               .WORD   X'044A          ; A             C     S   S   C
 4846 1F8F 0921 A               .WORD   X'0921          ; B               G   G   G     S
 4847 1F90 1121 A               .WORD   X'1121          ; C           G     G   G     S
 4848 1F91 0249 A               .WORD   X'0249          ; D               S   S   S   S
 4849 1F92 0041 A               .WORD   X'0041          ; E                   S       S
 4850 1F93 0104 A               .WORD   X'0104          ; F                 G       G
 4851 1F94 0084 A               .WORD   X'0084          ; 10                C       G
 4852 1F95 0082 A               .WORD   X'0082          ; 11                C       C
 4853 1F96              ;
 4854 1F96              XCFTE:                          ; END OF COMMAND FORMAT TABLE
 4855 1F96 0011 A XIMX:   .WORD   XCFTE-XCFT            ; MAXIMUM VALUE OF COMMAND INDEX
 4856 1F97              ;
```

```
 4859 1F97                .LIST   LBX
 4860 1F97        ;
 4861 1F97        ;                  ... TURN STATUS LIGHTS ON/OFF ...
 4862 1F97        ;                        UPON ENTRY, AC3 CONTAINS PERIPHERAL
 4863 1F97        ;                                    DEVICE ADDRESS
 4864 1F97        ;
 4865 1F97        ;                  ... TURN STATUS LIGHT 1 ON ...
 4866 1F97        XLON1:
 4867 1F97 4C00 A         LI      AC0,C0
 4868 1F98 0644 A         ROUT    FC44            ; OUTPUT CONTROL PULSE
 4869 1F99 0200 A         RTS     D0              ; RETURN FROM XLON1
 4870 1F9A        ;
 4871 1F9A        ;                  ... TURN STATUS LIGHT 1 OFF ...
 4872 1F9A        XLOF1:
 4873 1F9A 4C00 A         LI      AC0,C0
 4874 1F9B 0645 A         ROUT    FC45            ; OUTPUT CONTROL PULSE
 4875 1F9C 0200 A         RTS     D0              ; RETURN FROM XLOF1
 4876 1F9D        ;
 4877 1F9D        ;                  ... TURN STATUS LIGHT 2 ON ...
 4878 1F9D        XLON2:
 4879 1F9D 4C00 A         LI      AC0,C0
 4880 1F9E 0646 A         ROUT    FC46            ; OUTPUT CONTROL PULSE
 4881 1F9F 0200 A         RTS     D0              ; RETURN FROM XLON2
 4882 1FA0        ;
 4883 1FA0        ;                  ... TURN STATUS LIGHT 2 OFF ...
 4884 1FA0        XLOF2:
 4885 1FA0 4C00 A         LI      AC0,C0
 4886 1FA1 0647 A         ROUT    FC47            ; OUTPUT CONTROL PULSE
 4887 1FA2 0200 A         RTS     D0              ; RETURN FROM XLOF2
```

REVISION-F 10/02/73
PBD33J ••• P B D 3 3 J •••
DATA OUTPUT CPC - TURN STATUS LIGHTS ON/OFF

```
4888 1FA3                    .PAGE
4889 1FA3                    .ASECT
4890 1FA3 3000 A             .=X'3000
4891 3000          ;
```

```
4894 3000                .LIST   LDB
4895 3000          ;
4896 3000          ;                    ... D A T A   B A S E ...
4897 3000          ;
4898 3000          ;
4899 3000          ;                    ... BUS DETECTOR SIGNATURE DATA ...
4900 3000          ;
4901 3000          ;          ( UP TO 32 DETECTORS @ 8 WORDS PER SIGNATURE)
4902 3000          ;
4903 3000          ;                        WORD 0 - TOTAL SIGNATURE DURATION
4904 3000          ;                             1 - AMPLITUDE OF FIRST PEAK
4905 3000          ;                             2 - TIME OF FIRST PEAK
4906 3000          ;                             3 - AMPLITUDE OF SECOND PEAK
4907 3000          ;                             4 - TIME OF SECOND PEAK
4908 3000          ;                             5 - AMPLITUDE OF THIRD OR LAST PEAK
4909 3000          ;                             6 - TIME OF LAST PEAK
4910 3000          ;                             7 - END OF SIGNATURE STATUS
4911 3000          ;
4912 3000          VCSDR:
4913 3000 3100 A           .=.+256
4914 3100          ;
4915 3100          ;                    ... DATA INPUT CPC DATA BASE ...
4916 3100          BBUF:
4917 3100 3101 A BDIN:     .=.+1                ; DISCRETE INPUT DATA WORD
4918 3101 3102 A BCR1:     .=.+1                ; COMMAND REGISTER 1 STATUS
4919 3102 3103 A BCR2:     .=.+1                ; COMMAND REGISTER 2 STATUS
4920 3103          ;
4921 3103          ;                    ... PROG PANEL INPUT BUFFER ...
4922 3103          ;
4923 3103          ;                    ... DISCRETE SWITCHES ...
4924 3103          ;
4925 3103          ;                           DIAL 1
4926 3103          ;                      BIT 0, BUS PREEMPT
4927 3103          ;                      BIT 1, MASTER CONTROLLER SYNCH
4928 3103          ;
4929 3103          ;                           DIAL 2
4930 3103          ;                      BIT 4, BUS PREEMPT
4931 3103          ;                      BIT 5, MASTER CONTROLLER SYNCH
4932 3103          ;
4933 3103          ;                           DIAL 3
4934 3103          ;                      BIT 8, BUS PREEMPT
4935 3103          ;                      BIT 9, MASTER CONTROLLER SYNCH
4936 3103          ;
4937 3103          ;                      BIT 10, INPUT REQUEST
4938 3103          ;                      BIT 11, MANUAL OVERRIDE
4939 3103 3104 A BPPD:     .=.+1
4940 3104          ;
4941 3104          ;                    ... THUMBWHEEL INPUT DATA ...
4942 3104          ;
4943 3104          ;                      D0, CYCLE LENGTH
4944 3104          ;                      D1, OFFSET 1
4945 3104          ;                      D2, OFFSET 2
```

```
4946 3104                ;                          D3, OFFSET 3
4947 3104                ;                          D4, MSG SPLIT (%)
4948 3104                ;                          D5, INT 1
4949 3104                ;                          D6, INT 2
4950 3104 3108 A BPD1:   .=.+7                        ; DIAL 1
4951 3108 3112 A BPD2:   .=.+7                        ; DIAL 2
4952 3112 3119 A BPD3:   .=.+7                        ; DIAL 3
4953 3119                ;
4954 3119                ;                    ... DATA OUTPUT CPC DATA BASE ...
4955 3119                XBUF:
4956 3119 311A A XSDW:   .=.+1                        ; STATUS DISPLAY WORD
4957 311A 311B A XOCW1:  .=.+1                        ; OUTPUT COMMAND WORD 1 (MAIN STREET)
4958 311B 311C A XOCW2:  .=.+1                        ; OUTPUT COMMAND WORD 2 (CROSS STREET)
4959 311C 311D A XCIWC:  .=.+1                        ; CURRENT COMMAND INDEX WORD
4960 311D 311E A XCIWP:  .=.+1                        ; PREVIOUS COMMAND INDEX WORD
4961 311E                ;
4962 311E                ;                    ... PREEMPT CPC DATA BASE ...
4963 311E                PBUF:
4964 311E 311F A PIP:    .=.+1                            ; PREEMPT IN PROGRESS FLAG
4965 311F 3120 A PTEM:   .=.+1                            ; TEMPORARY STORAGE LOCATION
4966 3120 3121 A PTCP:   .=.+1                        ; PRIMARY CONTRACTIBLE INT ADDRESS
4967 3121 3122 A PTCS:   .=.+1                        ; SECONDARY CONTRACTIBLE INT ADDRESS
4968 3122 3123 A PTEI:   .=.+1                        ; EXTENDIBLE INT ADDRESS
4969 3123 3126 A PMIF:   .=.+3                            ; PREEMPT MONITOR INDEX FLAGS
4970 3126 3127 A PFREQ:  .=.+1                            ; PREEMPT REQUEST FLAG
4971 3127 3128 A PMDT:   .=.+1                            ; PREEMPT MINIMUM DURATION TIMER
4972 3128 3129 A PTAVT:  .=.+1                            ; AVAILIBLE TIME FOR INTERVAL RESTORATION
4973 3129 312A A PTITE:  .=.+1                            ; INTERVAL TO BE RESTORED
4974 312A 312B A PTPMT:  .=.+1                            ; FIRST LOCATION OF MASTER TIMING PLAN
4975 312B                ;
4976 312B                ;                    ... MAXIMUM PREEMPT EXTENSION PARAMETERS ...
4977 312B 312C A PEMAX:  .=.+1                        ; CURRENT DIAL
4978 312C 312D A         .=.+1                        ; DIAL 1
4979 312D 312E A         .=.+1                        ; DIAL 2
4980 312E 312F A         .=.+1                        ; DIAL 3
4981 312F                ;
4982 312F                ;                    ... VEHICLE CLASSIFIER DATA ...
4983 312F 3130 A VCDT:   .=.+1                            ; VEHICLE DETECTOR INDEX
4984 3130 3131 A VCBT:   .=.+1                        ; TIMER FOR RECENT BUS CLASS.
4985 3131                ;
4986 3131 3151 A VCVC:   .=.+32                       ; VEHICLE COUNTERS (ONE PER DETECTOR)
4987 3151 3165 A VCDB:   .=.+20
4988 3165                ;
4989 3165                ;                    ... VEHICLE CLASSIFIER VEHICLE LOG ...
4990 3165                ;
4991 3165                ;                         DOUBLE PRECISION, UNSIGNED WORDS
4992 3165                ;
4993 3165                VCLOG:
4994 3165 3167 A         .=.+2                            ; NUMBER OF SIGNATURES REJECTED AS NOISE
4995 3167 3169 A         .=.+2                            ; NUMBER OF GROSS TEST FAILURES
4996 3169 316B A         .=.+2                            ; NUMBER OF VEHICLES HANDLED BY
4997 316B                ;                                  STOPPED VEHICLE CLASSIFIER
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```
4998 316B 316D A          .=.+2                    ; NUMBER OF VEHICLES HANDLED BY
4999 316D         ;                                  MOVING VEHICLE CLASSIFIER
5000 316D 316F A          .=.+2                    ; NUMBER OF VEHICLES CLASSIFIED
5001 316F         ;                                  AS BUSES
5002 316F 3171 A          .=.+2                    ; NUMBER OF VEHICLES CLASSIFIED
5003 3171         ;                                  AS NON-BUSES
5004 3171         ;
5005 3171         ;                 ... TIMING PLAN CPC DATA BASE ...
5006 3171           TBUF:
5007 3171 3172 A TCIWC:   .=.+1                    ; COMMAND INDEX WORD BUFFER
5008 3172 3173 A TCDS:    .=.+1                    ; CURRENT DIAL SELECTION
5009 3173 3174 A TIN:     .=.+1                    ; CURRENT INTERVAL INDEX
5010 3174 3175 A TINT:    .=.+1                    ; CURRENT INTERVAL TIMER
5011 3175 3176 A TFST:    .=.+1                    ; WAIT FOR SYNC START FLAG
5012 3176 3177 A TEOC:    .=.+1                    ; END OF CYCLE FLAG
5013 3177 3178 A TEMP:    .=.+1                    ; TEMPORARY LOCATION
5014 3178 3179 A TDWL:    .=.+1                    ; DIAL 1, MAX DWELL FOR SYNC START
5015 3179 317A A          .=.+1                    ; DIAL 2, MAX DWELL FOR SYNC START
5016 317A 317B A          .=.+1                    ; DIAL 3, MAX DWELL FOR SYNC START
5017 317B 318F A TPM1:    .=.+20                   ; MASTER TP TABLE, DIAL 1
5018 318F 31A3 A TPM2:    .=.+20                   ; MASTER TP TABLE, DIAL 2
5019 31A3 31B7 A TPM3:    .=.+20                   ; MASTER TP TABLE, DIAL 3
5020 31B7 31CB A TNTP:    .=.+20                   ; NEXT TP TABLE
5021 31CB 31DF A TCTP:    .=.+20                   ; CURRENT TP TABLE
5022 31DF         ;
5023 31DF         ;                 ... EXECUTIVE CPC DATA BASE ...
5024 31DF         ;
5025 31DF           EBUF:
5026 31DF 31E0 A ERTCF:   .=.+1                    ; RTC COMPUTE FLAG
5027 31E0         ;
5028 31E0 31E1 A ETST:    .=.+1                    ; 'WAIT FOR SYNCH START' DWELL TIMER
5029 31E1         ;
5030 31E1 31E2 A ETCY:    .=.+1                    ; CURRENT CYCLE TIMER
5031 31E2 31E3 A          .=.+1                    ; PREVIOUS MAXIMUM
5032 31E3 31E4 A          .=.+1                    ; PREVIOUS MINIMUM
5033 31E4 31E5 A EPST:    .=.+1                    ; START PULSE INDICATOR
5034 31E5 31E6 A EPDT:    .=.+1                    ; START PULSE DURATION TIMER
5035 31E6         ;
5036 31E6 31E7 A ECMF:    .=.+1                    ; TEMPORARY FLAG FOR ECOM
5037 31E7           ESYD:                          ; SYNCH DATA BUFFER (DIAL 1,2,3)
5038 31E7                                          ;    WORD 0 - CYCLE LENGTH
5039 31E7                                          ;    WORD 1 - RESET 1 POSITION ON DIAL
5040 31E7                                          ;    WORD 2 - RESET 2 POSITION ON DIAL
5041 31E7                                          ;    WORD 3 - RESET 3 POSITION ON DIAL
5042 31E7                                          ;    WORD 4 - END OF START PULSE (3 %)
5043 31E7                                          ;    WORD 5 - SYNCH DIAL TIMER
5044 31E7 31ED A          .=.+6                    ; DIAL 1
5045 31ED 31F3 A          .=.+6                    ; DIAL 2
5046 31F3 31F9 A          .=.+6                    ; DIAL 3
5047 31F9         ;
5048 31F9         ;                 ... LOOP MASTER INTERCONNECT DATA ...
5049 31F9 31FA A ER123:   .=.+1                    ; RESET SELECT
```

```
 5050 31FA 31FB A ERN0:   .=.+1          ; ERN0, 0TH PAST VALUE OF R1,R2,R3
 5051 31FB 31FC A         .=.+1          ; ERN1, 1ST PAST VALUE OF R1,R2,R3
 5052 31FC 31FD A         .=.+1          ; ERN2, 2ND PAST VALUE OF R1,R2,R3
 5053 31FD        ;
 5054 31FD 31FE A ED23:   .=.+1          ; DIAL SELECT
 5055 31FE 31FF A EDN0:   .=.+1          ; EDN0, 0TH PAST VALUE OF D2,D3
 5056 31FF 3200 A         .=.+1          ; EDN1, 1ST PAST VALUE OF D2,D3
 5057 3200 3201 A         .=.+1          ; EDN2, 2ND PAST VALUE OF D2,D3
 5058 3201        ;
 5059 3201 3202 A EDMIT:  .=.+1          ; DETECTOR MONITORING INTERVAL TIMER
 5060 3202 3203 A EDETT:  .=.+1          ; TEMP STORAGE FOR DET MONITORING
 5061 3203        ;
```

```
5064 3203                .LIST   LDB
5065 3203          ;
5066 3203          ;                    ... SAVE AREA FOR RTC INTERRUPTS ...
5067 3203          ESAV:
5068 3203 3204 A           .=.+1                    ; AC0
5069 3204 3205 A           .=.+1                    ; AC1
5070 3205 3206 A ESV2:     .=.+1                    ; AC2
5071 3206 3207 A           .=.+1                    ; AC3
5072 3207 3208 A ESVF:     .=.+1                    ; RALU FLAGS
5073 3208 3218 A           .=.+16                   ; STACK SAVE AREA
5074 3218 3219 A ESVS:     .=.+1                    ; SELECT FLAG STATE
5075 3219          ;
5076 3219          ;                    ... SNAPSHOT (COTF) SAVE AREA ...
5077 3219          CSAV:
5078 3219 321A A           .=.+1                          ; AC0
5079 321A 321B A           .=.+1                          ; AC1
5080 321B 321C A CSV2:     .=.+1                          ; AC2
5081 321C 321D A           .=.+1                          ; AC3
5082 321D 321E A CSVF:     .=.+1                          ; RALU FLAGS
5083 321E 322E A           .=.+16                         ; STACk SAVE AREA
5084 322E 322F A CSVS:     .=.+1                          ; SELECT FLAG STATE
5085 322F          ;
5086 322F          ;                    ... STACKFULL SAVE AREA ...
5087 322F          ISV:
5088 322F 3230 A ISV0:     .=.+1
5089 3230 3231 A ISV1:     .=.+1
5090 3231 3232 A ISV2:     .=.+1
5091 3232 3233 A ISV3:     .=.+1
5092 3233 3234 A ISTK1:    .=.+1
5093 3234 3235 A ISTK2:    .=.+1
5094 3235 3236 A ISTK3:    .=.+1
5095 3236 3237 A ISTK4:    .=.+1
5096 3237 3243 A ISTK5:    .=.+12
5097 3243          ;
5098 3243          ;                    ... DISCONNECT SAVE AREA ...
5099 3243          EDSAV:
5100 3243 3244 A           .=.+1                    ; AC0
5101 3244 3245 A           .=.+1                    ; AC1
5102 3245 3246 A EDSV2:    .=.+1                    ; AC2
5103 3246 3247 A           .=.+1                    ; AC3
5104 3247 3248 A EDSVF:    .=.+1                    ; RALU FLAGS
5105 3248 3258 A           .=.+16                   ; STACK SAVE AREA
5106 3258 3259 A EDSVS:    .=.+1                    ; SELECT FLAG STATE
5107 3259          ;
5108 3259          ;                    ... OPTIONAL USE SAVE AREA ...
5109 3259 3261 A CTST:     .=.+8                          ; OPTIONAL USE SAVE AREA
```

```
 5112 3261                    .LIST   LDB
 5113 3261          ;
 5114 3261          ;                    ... PROG. PANEL DATA ...
 5115 3261          ;
 5116 3261          ;                                PANEL ROUTINE WORKING BUFFER
 5117 3261 3268 A EPD1:    .=.+7                          ; (SAME ALLOCATION AS BPD1)
 5118 3268 326F A EPD2:    .=.+7                          ; (SAME ALLOCATION AS BPD2)
 5119 326F 3276 A EPD3:    .=.+7                          ; (SAME ALLOCATION AS BPD3)
 5120 3276          ;
 5121 3276          ;                                PANEL CONVERTED DATA UPDATE BUFFER
 5122 3276 3277 A EPCD1:   .=.+1                          ; FIRST ADJ. INT. LENGTH, DIAL 1
 5123 3277 3278 A          .=.+1                          ; SECOND ADJ. INT. LENGTH, DIAL 1
 5124 3278 3279 A          .=.+1                          ; DELTA EMAX,              DIAL 1
 5125 3279 327A A          .=.+1                          ; CYCLE LENGTH             DIAL 1
 5126 327A 327B A          .=.+1                          ; RESET 1                  DIAL 1
 5127 327B 327C A          .=.+1                          ; RESET 2                  DIAL 1
 5128 327C 327D A          .=.+1                          ; RESET 3                  DIAL 1
 5129 327D 327E A          .=.+1                          ; START PULSE DURATION     DIAL 1
 5130 327E 327F A          .=.+1                          ; MAX DWELL AT MSG         DIAL 1
 5131 327F 3280 A          .=.+1                          ; INT2                     DIAL 1
 5132 3280 328A A EPCD2:   .=.+10                         ;                          DIAL 2
 5133 328A 3294 A EPCD3:   .=.+10                         ;                          DIAL 3
 5134 3294          ;
 5135 3294          ;                                FIXED TIME IN CYCLE
 5136 3294 3295 A EPFT:    .=.+1                          ; SUM OF FIXED INTERVALS   DIAL 1
 5137 3295 3296 A          .=.+1                          ; SUM OF FIXED INTERVALS   DIAL 2
 5138 3296 3297 A          .=.+1                          ; SUM OF FIXED INTERVALS   DIAL 3
 5139 3297          ;
 5140 3297 3298 A EP1E:    .=.+1                  ; ERROR FLAG FOR PLAN 1
 5141 3298 3299 A EP2E:    .=.+1                  ; ERROR FLAG FOR PLAN 2
 5142 3299 329A A EP3E:    .=.+1                  ; ERROR FLAG FOR PLAN 3
 5143 329A 329B A EPDVE:   .=.+1                  ; ERROR FLAG FOR DATA VALIDITY
 5144 329B          ;
 5145 329B 329C A EPUF:    .=.+1                  ; PROG PANEL UPDATE FLAG
 5146 329C 329D A EPCF:    .=.+1                  ; PROG PANEL COMPUTATION FLAG
 5147 329D 329E A EPIR:    .=.+1                  ; STATE OF PROG PANEL INPUT REQ SWITCH
```

```
 5150 329E                      .LIST   LDB
 5151 329E          ;
 5152 329E          ;                        ••• SELF TEST DATA BASE •••
 5153 329E 329F A SSAD:    .=.+1                      ; RAM ADDRESS TEST START ADDRESS
 5154 329F 32A0 A SEAD:    .=.+1                      ; RAM ADDRESS TEST END ADDRESS
 5155 32A0 32BE A          .=.+30                     ; (EXPANSIBILITY)
 5156 32BE          ;
```

```
 5159 32BE                      .LIST   LDB
 5160 32BE              ;
 5161 32BE              ;                       ... E R R O R   B U F F E R ...
 5162 32BE              ;
 5163 32BE              ;                       ... DATA INPUT CPC ERROR FLAGS, COUNTERS, DATA ...
 5164 32BE              BEPR:
 5165 32BE 32BF A BERRF:  .=.+1                         ; ERROR FLAGS
 5166 32BF              ;
 5167 32BF              ;                       ... DATA OUTPUT CPC ERROR FLAGS, COUNTERS, DATA ...
 5168 32BF              XEPR:
 5169 32BF 32C0 A XERRF:  .=.+1                         ; ERROR FLAGS (SET CONDITION, BIT = 1)
 5170 32C0              ;                                   BIT 0, INVALID COMMAND INDEX FOR
 5171 32C0              ;                                          MAIN STREET
 5172 32C0              ;                                   BIT 1, INVALID COMMAND INDEX FOR
 5173 32C0              ;                                          CROSS STREET
 5174 32C0 32C2 A XERR0:  .=.+2                         ; ERROR COUNTER, ERROR WORD
 5175 32C2 32C4 A XERR1:  .=.+2                         ; ERROR COUNTER, ERROR WORD
 5176 32C4              ;
 5177 32C4              ;                       ... PREEMPT CPC ERROR FLAGS, COUNTERS, DATA ...
 5178 32C4              PERR:
 5179 32C4 32C5 A PERRF:  .=.+1                         ; ERROR BUFFER FLAG (SET CONDITION, BIT = 1)
 5180 32C5              ;                                   BIT 0, ARITHMETIC OVERFLOW
 5181 32C5              ;                                   BIT 1, OUT OF RANGE (VCLASS DETECTOR INDEX)
 5182 32C5              ;                                   BIT 2, DATA EXCEEDS BOUNDS (VEHICLE AMP)
 5183 32C5              ;                                   BIT 3, DATA EXCEEDS BOUNDS (VEHICLE TIME)
 5184 32C5              ;                                   BIT 4, DATA SEQUENCE ERROR (VEHICLE TIME)
 5185 32C5              ;                                   BIT 5, DATA VALIDITY ERROR (NOISE)
 5186 32C5              ;                                   BIT 6, EOS STATUS WORD ALTERED DURING COPY
 5187 32C5              ;                                          OPERATION
 5188 32C5              ;                                   BIT 7, SIGNATURE LOST DURING COPY OPERATION
 5189 32C5              ;                                   BIT 8, OUT OF RANGE (PREQ DETECTOR INDEX)
 5190 32C5              ;                                ... PBD33J ...
 5191 32C5              ;                                   BIT 9, DATA VALIDITY ERROR ( ATTEMPT
 5192 32C5              ;                                          TO PREEMPT DOWNSTREAM VEHICLE)
 5193 32C5              ;                                ... PBD14C ...
 5194 32C5              ;                                   BIT 9, NON-POSITIVE DURATION OF SOURCE
 5195 32C5              ;                                          EXCHANGE INTERVAL AT PREEMPT MOD
 5196 32C5              ;
 5197 32C5 32D9 A               .=.+20                      ; (ERROR COUNTER, ERROR WORD)
 5198 32D9              ;
 5199 32D9              ;                       ... TIMING PLAN CPC ERROR FLAGS, COUNTERS, DATA ...
 5200 32D9              TERR:
 5201 32D9 32DA A TERRF:  .=.+1                         ; ERROR FLAGS (SET CONDITION, BIT = 1)
 5202 32DA              ;                                   BIT 0, DIAL SELECT ERROR
 5203 32DA              ;                                   BIT 1, INTERVAL INDEX OUT OF RANGE
 5204 32DA 32DC A TERR0:  .=.+2                         ; ERROR COUNTER, ERROR WORD
 5205 32DC 32DE A TERR1:  .=.+2                         ; ERROR COUNTER, ERROR WORD
 5206 32DE              ;
 5207 32DE              ;                       ... EXECUTIVE CPC ERROR FLAGS, COUNTERS, DATA ...
 5208 32DE              EEPR:
 5209 32DE 32DF A EERRF:  .=.+1                         ; ERROR FLAGS (SET CONDITION, BIT = 1)
 5210 32DF              ;                                   BIT 0, RTC ERROR
```

```
32DF          ;                                   BIT 1, DCR1.NE.DOCW1
32DF          ;                                   BIT 2, DCR2.NE.DOCW2
32DF          ;                                   BIT 3, MORE THAN ONE RESET HIGH
32DF          ;                                   BIT 4, DETECTOR UNDERCOUNTING
32DF                                        ;            (TOTAL FOR ALL DETECTORS,
32DF                                        ;             INDEX OF LAST DETECTOR)
32DF          ;                                   BIT 5, INVALID DET INDEX
32DF 32E1 A EERR0:  .=.+2                   ; ERROR COUNTER, ERROR WORD
32E1 32E3 A EERR1:  .=.+2                   ; ERROR COUNTER, ERROR WORD
32E3 32E5 A EERR2:  .=.+2                   ; ERROR COUNTER, ERROR WORD
32E5 32E7 A EERR3:  .=.+2                   ; ERROR COUNTER, ERROR WORD
32E7 32E9 A EERR4:  .=.+2                   ; ERROR COUNTER, ERROR WORD
32E9 32EB A EERR5:  .=.+2                   ; ERROR COUNTER, ERROR WORD
32EB          ;
32EB          ;                     ... PROG. PANEL ERROR DATA ...
32EB          ;
32EB          ;                           ERROR FLAGS (SET CONDITION, BIT = 1)
32EB          ;                              BIT 0, ERROR IN ADJ INT OF TP MASTER
32EB          ;                              BIT 1, DATA VALIDITY ERROR (CYCLE LENGTH)
32EB          ;                              BIT 2, DATA VALIDITY ERROR (OFFSET 1)
32EB          ;                              BIT 3, DATA VALIDITY ERROR (OFFSET 2)
32EB          ;                              BIT 4, DATA VALIDITY ERROR (OFFSET 3)
32EB          ;                              BIT 5, DATA VALIDITY ERROR (MSG SPLIT %)
32EB          ;                              BIT 6, DATA VALIDITY ERROR (INT1)
32EB          ;                              BIT 7, DATA VALIDITY ERROR (INT2)
32EB          ;                              BIT 8,  OUT OF RANGE (CYCLE LENGTH)
32EB          ;                              BIT 9,  OUT OF RANGE (OFFSET 1)
32EB          ;                              BIT 10, OUT OF RANGE (OFFSET 2)
32EB          ;                              BIT 11, OUT OF RANGE (OFFSET 3)
32EB          ;                              BIT 12, OUT OF RANGE (INT1)
32EB          ;
32EB          ;
32EB 32EC A EPEF1:  .=.+1                   ; ERROR FLAGS
32EC 3306 A         .=.+26                  ; (ERROR COUNTER, ERROR WORD)
3306          ;
3306 3307 A EPEF2:  .=.+1                   ; ERROR FLAGS
3307 3321 A         .=.+26                  ; (ERROR COUNTER, ERROR WORD)
3321          ;
3321 3322 A EPEF3:  .=.+1                   ; ERROR FLAGS
3322 333C A         .=.+26                  ; (ERROR COUNTER, ERROR WORD)
333C          ;
333C          ;                     ... DETECTOR ERROR COUNTERS, DATA ...
333C          EDERR:
333C 337C A         .=.+64                  ; (ERROR COUNTER, ERROR DATUM)
337C                                        ;    FOR 32 DETECTORS
337C          ;
337C          ;
337C 337D A DEND:   .=.+1                   ; LAST LOCATION IN READ/WRITE DATA BASE
```

```
5259 337D                    .PAGE   '   '
5260 337D                    .LIST   1
5261 337D 0001 A LAC         =       1
5262 337D 0001 A LBP         =       1
5263 337D 0001 A LER         =       1
5264 337D 0001 A LES         =       1
5265 337D 0001 A LPP         =       1
5266 337D 0001 A LTP         =       1
5267 337D 0001 A LPR         =       1
5268 337D 0001 A LVC         =       1
5269 337D 0001 A LEB         =       1
5270 337D 0001 A LBX         =       1
5271 337D 0001 A LDB         =       1
5272 337D 0001 A LDU         =       1
5273 337D                    .EXTD
5274 337D                    .END

  ******      0 ERRORS IN ASSEMBLY   ******
```

```
ABBUF  ABDIN  ABERR  ABLSMU ABPAN  ABPD1  ABPD2  ABPD3  ABPPD  ABRTC
0068 A 0069 A 006A A 00E1 A 003E A 00BC A 00BD A 00BE A 00BB A 003C A

AC0    AC1    AC2    AC3    ACCU   ACCUI  ACDISP ACMU   ACOTF  ACRAM
0000 A 0001 A 0002 A 0003 A 00E8 A 10DA A 10DC A 00E2 A 003D A 10DD A

ACSAV  ACSV2  ACSVF  ACSVS  ACTST  ACWAP  ADEND  ADMU   AE10   AE100
00AE A 00AF A 00B0 A 00B1 A 00BA A 10DE A 00D6 A 00E5 A 00CC A 00CB A

AEADC  AEBKD  AEBUF  AECCU  AECCUR AECER  AECMF  AECOM  AED23  AEDERR
002F A 0024 A 009A A 0022 A 10DF A 0025 A 00A0 A 0028 A 00A4 A 00A8 A

AEDET  AEDETT AEDIS  AEDMIT AEDN0  AEDSV2 AEDSVF AEDSVS AEFOC  AEERR
002E A 00A7 A 0027 A 00A6 A 00A5 A 00B7 A 00B8 A 00B9 A 002C A 009F A

AEGIS  AEM10  AEM24  AEMAD  AEMIC  AEP1E  AEP2E  AEP3E  AEPAN  AEPBI2
0021 A 0047 A 0048 A 0023 A 002A A 00CD A 00CE A 00CF A 003F A 0045 A

AEPBI3 AEPCD1 AEPCD2 AEPCD3 AEPCF  AEPCY  AEPD1  AEPD2  AEPD3  AEPDT
0046 A 00C2 A 00C3 A 00C4 A 00C7 A 00C9 A 00BF A 00C0 A 00C1 A 009E A

AEPDVE AEPEF1 AEPEF2 AEPEF3 AEPFT  AEPIN1 AEPIR  AEPP1  AEPP2  AEPP3
00D0 A 00D1 A 00D2 A 00D3 A 00C5 A 00CA A 00C8 A 0041 A 0042 A 0043 A

AEPPM  AEPST  AEPUF  AEPUP  AER123 AERAM  AERE0  AERE1  AERF10 AERE11
0040 A 009D A 00C6 A 0044 A 00A2 A 00A9 A 0049 A 004A A 0053 A 0054 A

AERE12 AERE2  AERE3  AERE4  AERE5  AERE6  AERE7  AERE8  AERF9  AERN0
0055 A 0048 A 004C A 004D A 004E A 004F A 0050 A 0051 A 0052 A 00A3 A

AERSI  AESAV  AESCH  AESDW  AESV2  AESVF  AESVS  AESYD  AESYN  AETCY
0020 A 00AA A 0026 A 002D A 00AB A 00AC A 00AD A 00A1 A 0029 A 009B A

AETIM  AETST  AISTK1 AISTK2 AISTK3 AISTK4 AISV2  ALDU   APBUF  APCIM
002B A 009C A 00B3 A 00B4 A 00B5 A 00B6 A 00B2 A 00E0 A 006D A 0034 A

APEMAX APERR  APFREQ APIP   APMDT  APMIF  APMON  APP1U  APP2U  APP3U
0076 A 0077 A 0074 A 006E A 0075 A 0073 A 0030 A 00EA A 00FB A 00EC A

APPDU  APREQ  APTAVT APTCP  APTCS  APTEI  APTEM  APTER  APTITE APTPMT
00E9 A 0032 A 0078 A 0070 A 0071 A 0072 A 006F A 0033 A 0079 A 007A A

ARTC   ASDB   ASDU   ASEAD  ASMAD  ASSAD  ATAI1  ATAI2  ATBUF  ATCDS
00E7 A 00E6 A 00E4 A 00D5 A 005A A 00D4 A 0093 A 0094 A 0081 A 0083 A

ATCIW  ATCIWC ATCOPY ATCP   ATCTP  ATDIAL ATDWL  ATECI  ATEMP  ATEOC
0097 A 0082 A 0036 A 00E3 A 008F A 0033 A 0089 A 0096 A 0088 A 0087 A

ATERR  ATEST  ATHI   ATIMX  ATIN   ATINT  ATNCY  ATNTP  ATPE   ATPEX
0090 A 0086 A 0092 A 0095 A 0084 A 0085 A 0037 A 008E A 0099 A 0035 A
```

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ATPM1  ATPM2  ATPM3  ATPP   ATPTAB ATSCI  AVCBT  AVCBUS AVCDB  AVCDT
008B A 008C A 008D A 008A A 0098 A 0091 A 007B A 1D23 A 007F A 007E A

AVCER  AVCK   AVCLAS AVCLOG AVCSDB AVCVC  AVCVNB AXBUF  AXCFT  AXERR
1D25 A 1D91 A 0031 A 007D A 0080 A 007C A 1D24 A 006B A 1F84 A 006C A

AXLOF1 AXLOF2 AXLON1 AXLON2 AXRTC  AXSDC  AXWDT  BBUF   BCR1   BCR2
0057 A 0059 A 0056 A 0058 A 0039 A 003B A 003A A 3100 A 3101 A 3102 A

BDIN   BERR   BERRF  BPAN   BPD1   BPD2   BPD3   BPIN   BPPD   BRTC
3100 A 32BE A 32BE A 1F0D A 3104 A 310B A 3112 A 1F19 A 3103 A 1F00 A

C0     C1     C125   C15    C2     C3     C4     C48    C5     C6
0000 A 0001 A 007D A 000F A 0002 A 0003 A 0004 A 0030 A 0005 A 0006 A

C7     C8     CCB0   CCB1   CCCF   CCCU   CCEZ   CCNZ   CCPH   CCSF
0007 A 0008 A 0003 A 0004 A 000E A 000C A 0001 A 0005 A 000D A 0008 A

CCZN   CCZP   CM1    CM10   CM100  CM110  CM16   CM2    CM20   CM6
000B A 0002 A FFFF A FFF6 A FF9C A FF92 A FFF0 A FFFE A FFFC A FFFA A

COTF   COTF1  COTF2  COTF3  COTF4  COTF5  CSAV   CSV2   CSVF   CSVS
1143 A 114E A 115F A 1161 A 1172 A 1175 A 3219 A 321B A 321D A 322E A

CTST   D0     D1     D10    D11    D116   D118   D12    D13    D14
3259 A 0000 A 0001 A 000A A 000B A 0074 A 0076 A 000C A 000D A 000E A

D15    D16    D17    D18    D19    D2     D20    D21    D22    D23
000F A 0010 A 0011 A 0012 A 0013 A 0002 A 0014 A 0015 A 0016 A 0017 A

D24    D25    D26    D3     D4     D5     D6     D7     D8     D9
0018 A 0019 A 001A A 0003 A 0004 A 0005 A 0006 A 0007 A 0008 A 0009 A

DEND   DETS   DM1    DM12   DM2    DM4    DM7    DPMD   E10    F100
337C A 0004 A FFFF A FFF4 A FFFE A FFFC A FFF9 A 0019 A 146C A 146D A

EADC   EADC1  EADC2  EADC3  EADC4  EBKD   EBKD1  EBKDE  EBUF   ECCU
110F A 111F A 1130 A 1132 A 113B A 1E00 A 1E00 A 1E0A A 31DF A 10C2 A

ECCU1  ECCUI  ECCUR  ECER   ECMF   ECOM   ECOM1  ECOM2  ECOMR  ED23
10CB A 10DB A 10D9 A 10BF A 31E6 A 1212 A 1227 A 123B A 123F A 31FD A

EDERR  EDET   EDET1  EDET2  EDET3  EDET32 EDETI  EDETM  EDFTR  EDETT
333C A 12B2 A 12B6 A 12C6 A 12D3 A 12DE A 12DC A 12DD A 12DB A 3202 A

EDIS   EDISH  EDLAY  EDMIT  EDNO   EDSAV  EDSV2  EDSVF  EDSVS  EEOC
1200 A 120F A 110E A 3201 A 31FE A 3243 A 3245 A 3247 A 3258 A 131B A

EERR   EERR0  EERR1  EERR2  EERR3  EERR4  EERR5  EERRF  FGIS   FGIS1
32DE A 32DF A 32E1 A 32E3 A 32E5 A 32E7 A 32E9 A 32DE A 1041 A 104D A
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EGIS2	EGIS3	EGIS4	EGIS5	EHLT	EM10	EM24	EMAD	EMADE	EMADR
105E A	108B A	10A7 A	10AA A	1039 A	174D A	1752 A	10E0 A	10FF A	10F2 A
EMIC	EMIC1	EMIC2	EP1E	EP2E	EP3E	EPAN	EPAN1	EPANE	EPANE1
1282 A	1291 A	12A0 A	3297 A	3298 A	3299 A	1400 A	1426 A	1420 A	1422 A
EPBI	EPBI1	EPBI2	EPBI3	EPBIR	EPCD1	EPCD2	EPCD3	EPCF	EPCY
1726 A	173E A	1733 A	1726 A	1745 A	3276 A	3280 A	328A A	329C A	146A A
EPD1	EPD2	EPD3	EPDT	EPDVE	EPEF1	EPEF2	EPEF3	EPEOC	EPFI
3261 A	3268 A	326F A	31E5 A	329A A	32EB A	3306 A	3321 A	1321 A	1461 A
EPFI1	EPFIR	EPFT	EPIN1	EPIR	EPP1	EPP10	EPP11	EPP12	EPP13
1462 A	1469 A	3294 A	146B A	329D A	14C4 A	14F3 A	150C A	1525 A	153E A
EPP14	EPP15	EPP2	EPP20	EPP21	EPP22	EPP23	EPP24	EPP25	EPP3
155B A	1572 A	1578 A	15A7 A	15C0 A	15D9 A	15F2 A	160F A	1626 A	162C A
EPP30	EPP31	EPP32	EPP33	EPP34	EPP35	EPPM	EPPM1	EPPM2	EPPM3
165B A	1674 A	168D A	16A6 A	16C3 A	16DA A	146E A	1478 A	148B A	1499 A
EPPM4	EPPM5	EPPMR	EPST	EPUF	EPUP	EPUPS	ER123	ERE0	ERE1
14A7 A	14B5 A	14C2 A	31E4 A	329B A	16E0 A	171A A	31F9 A	1340 A	1349 A
ERE10	ERE11	ERE12	ERE2	ERE3	ERE4	ERE5	ERE6	ERE7	ERE8
139A A	13A3 A	13AC A	1352 A	135B A	1364 A	136D A	1376 A	137F A	1388 A
ERE9	ERN0	ERSI	ERTC	ERTC1	ERTCF	ERTS	ESAV	ESCH	ESDW
1391 A	31FA A	1000 A	108B A	1098 A	31DF A	110D A	3203 A	10F3 A	12E0 A
ESDW1	ESTK	ESTK1	ESV2	ESVF	ESVS	ESYA	ESYA1	ESYA2	ESYD
1301 A	1061 A	1078 A	3205 A	3207 A	3218 A	1279 A	127C A	1281 A	31E7 A
ESYN	ESYN1	ESYN2	ESYN3	ESYN4	ESYN4A	ESYN5	ESYN6	ETCPY	ETCY
123F A	1257 A	125C A	1261 A	1267 A	1266 A	1272 A	1278 A	1023 A	31E1 A
ETEOC	ETEOC1	ETEOC2	ETIM	ETIM1	ETIMR	ETST	EVCVC	EZDB	FC1
1333 A	1339 A	133D A	12A3 A	12AD A	12B1 A	31E0 A	12DF A	101C A	0001 A
FC10	FC11	FC12	FC13	FC14	FC15	FC17	FC2	FC3	FC4
0010 A	0011 A	0012 A	0013 A	0014 A	0015 A	0017 A	0002 A	0003 A	0004 A
FC41	FC42	FC43	FC44	FC45	FC46	FC47	H0006	H0009	H000F
0041 A	0042 A	0043 A	0044 A	0045 A	0046 A	0047 A	1F81 A	174C A	12A1 A
H000F	H0010	H0030	H007F	H0090	H00F0	H0200	H0400	H0900	H0F00
1749 A	131A A	12A2 A	1F82 A	174B A	1748 A	00F5 A	14C3 A	174A A	1747 A
H0FFF	H1T1	H1T2	H2T1	H2T2	H3000	H30FF	H3FFF	H7F00	H7FFF
1040 A	1C8E A	1C8F A	1C90 A	1C91 A	00F1 A	00F6 A	00F2 A	1F83 A	00F0 A

HEC00	HECCF	HF800	HFFEF	INEN	ISTK1	ISTK2	ISTK3	ISTK4	ISTK5
00F3 A	00F4 A	1318 A	1319 A	0001 A	3233 A	3234 A	3235 A	3236 A	3237 A

ISV	ISV0	ISV1	ISV2	ISV3	LAC	LBP	LBX	LDB	LDU
322F A	322F A	3230 A	3231 A	3232 A	0001 A	0001 A	0001 A	0001 A	0001 A

LEB	LER	LES	LPP	LPR	LTP	LVC	P10	P12	P14
0001 A	0001 A	0001 A	0001 A	0001 A	0001 A	0001 A	1BC4 A	1BD5 A	1BEF A

P14A	P18	P18A	P2	P20	P21	P3	P5	P6	P7
1BF1 A	1C02 A	1C04 A	1B36 A	1C10 A	1C16 A	1B55 A	1B65 A	1B7F A	1B9A A

P8	PBUF	PC1	PC15	PC2	PC3	PCIM	PEMAX	PERR	PERRF
1BAB A	311E A	1A5C A	1A5F A	1A73 A	1A84 A	1A4E A	312B A	32C4 A	32C4 A

PFREQ	PIP	PM01	PM02	PM03	PM04	PM05	PMAS	PMDT	PMHD
3126 A	311E A	1ACD A	1A14 A	1A15 A	1A20 A	1A1A A	1AE0 A	3127 A	1A34 A

PMIF	PMON	PMRET	PR0	PR1	PREQ	PRER8	PRER9	PRET	PRHD
3123 A	1A00 A	1A33 A	1AFE A	1B0B A	1AE6 A	1AF4 A	1AF8 A	1AFD A	1AE4 A

PRLD	PSWCH	PSWFC	PSWFD	PT18A	PT2	PT20	PT3	PT4	PT5
1AE5 A	1A35 A	1A4C A	1A4D A	1B54 A	1A99 A	1B7D A	1A9B A	1AB2 A	1ABD A

PT6	PT7	PT8	PTAVT	PTCP	PTCS	PTEI	PTEM	PTFND	PTER
1AC2 A	1AC6 A	1ACD A	3128 A	3120 A	3121 A	3122 A	311F A	1ADC A	1A88 A

PTITE	PTPMT	PTRET	SEAD	SELF	SMAD	SMAD1	SMAD2	SMAD3	SMADE
3129 A	312A A	1A8F A	329F A	0002 A	1E0C A	1E0F A	1E14 A	1E1C A	1E19 A

SSAD	T0	T1	T2	T3	TAI1	TAI2	TBUF	TCDS	TCIW
329E A	182D A	182E A	182F A	1830 A	18D5 A	18D6 A	3171 A	3172 A	1918 A

TCIWC	TCOPY	TCTP	TD1	TD2	TD3	TDCH	TDIAL	TDSEL	TDWL
3171 A	18C9 A	31CB A	1880 A	18AA A	18AE A	18B4 A	1896 A	18B1 A	3178 A

TECI	TEMP	TEOC	TERR	TERR0	TERR1	TERRF	TEZ	TFST	TGZ
18D8 A	3177 A	3176 A	32D9 A	32DA A	32DC A	32D9 A	1844 A	3175 A	1852 A

THI	TIMX	TIN	TINT	TLOOP	TLZ	TMSG	TNCY	TND2	TNDC
18D4 A	18D7 A	3173 A	3174 A	18CA A	184D A	180E A	1866 A	18AC A	18C0 A

TNTP	TNXT	TOL	TPE	TPEX	TPM1	TPM2	TPM3	TPTAB	TPUE
31B7 A	1831 A	1859 A	1967 A	1800 A	317B A	318F A	31A3 A	192C A	1896 A

TRSET	TSCI	TSD2	TSD3	TSST	TSYNC	TSYNCE	TSYNCR	VC01	VC02
1829 A	18D3 A	1878 A	187F A	1818 A	1870 A	1888 A	1886 A	1C40 A	1C4D A

VC31	VC32	VC41	VC42	VCBT	VCBUS	VCC0	VCCP	VCDB	VCDHK
1C8A A	1C8B A	1C8C A	1C8D A	3130 A	1D92 A	1D15 A	1D14 A	3151 A	1C92 A

VCDT	VCER	VCER1	VCER2	VCER3	VCER4	VCGTF	VCHD	VCHF	VCHFE
312F A	1DA2 A	1C72 A	1C76 A	1C7A A	1C7E A	1C6B A	1C82 A	1CEC A	1CBC A

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VCK     VCK0    VCK1    VCK2    VCK21   VCK3    VCK5    VCK6    VCK7    VCK8
1CF6 A  1D0C A  1D10 A  1D26 A  1D27 A  1D33 A  1D42 A  1D5A A  1D5F A  1D61 A

VCK9    VCKFE   VCLAS   VCLD    VCLOG   VCM15   VCMA    VCMOF   VCMT    VCNK
1D77 A  1CED A  1C19 A  1C83 A  3165 A  1D22 A  1C84 A  1C86 A  1C85 A  1D8B A

VCRET   VCSDB   VCST1   VCST2   VCST3   VCVC    VCVNB   XBUF    XCCF    XCER
1C3E A  3000 A  1C87 A  1C88 A  1C89 A  3131 A  1D9B A  3119 A  1F66 A  1F43 A

XCFT    XCFTE   XCIWC   XCIWP   XERR    XERR0   XERR1   XERRF   XFO1    XFO2
1F85 A  1F96 A  311C A  311D A  32BF A  32C0 A  32C2 A  32BF A  1F5C A  1F72 A

XFOW    XIMX    XLOF1   XLOF2   XLON1   XLON2   XMCE    XOCW1   XOCW2   XRTC
1F4B A  1F96 A  1F9A A  1FA0 A  1F97 A  1F9D A  1F50 A  311A A  311B A  1F28 A

XSDC    XSDW    XWDT
1F36 A  3119 A  1F32 A

   DF2C    9870
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SNUMB = PB33J, ACTIVITY # = 03, REPORT CODE = 74, RECORD COUNT = 000026

ORIGIN DATE MODULE ENTRY LOCATION ENTRY LOCATION ENTRY LOCATION ENTRY LOCATION ENTRY LOCATION

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                SUBPROGRAMS INCLUDED IN DECK.

$       OPTION  FORTRAN,NOMAP
$       LIBRARY L1

                SUBPROGRAMS OBTAINED FROM USERS   LIBRARY     L1

                SUBPROGRAMS OBTAINED FROM SYSTEM LIBRARY

                                    RANGE                SIZE
ALLOCATED CORE      000000 THRU 047777        050000
   RELOCATABLE      003400 THRU 047777        044400
$       PRMFL   L1,R,P,USERLIB/UTILITY/BUTIL
$       FILE    10,X1R
$       FILE    11,X2R,40L
$       FILE    S1,X3R,44R

FCB AND BUFFER SPACE
   AVAILABLE        000101 THRU 003377        003277
   FILE CTRL BLKS   003174 THRU 003400        000205
   MAXIMUM BUFFER SPACE REQUIRED              002404

    20K, IS THE MINIMUM MEMORY NEEDED TO LOAD THIS ACTIVITY WITH ALL FILES OPEN      730517 F/8
001306 LOCATIONS REQUIRED FOR LOAD TABLE
EXECUTION PROGRAM ENTERED AT  047356   THROUGH  .FSETU
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SNUMB = PB33J, ACTIVITY # = 03, REPORT CODE = 06, RECORD COUNT = 002087

214	ABBUF	1078 1102 3395 4623
215	ABDIN	1056 1227 1246 1277 1429 1437 2916 3000 3546 3666
216	ABERR	1409
388	ABLSMU	NOT USED
173	ABPAN	1688 1898
337	ABPD1	2000 2067 2100 2133 2166 2201
338	ABPD2	2240 2307 2340 2373 2406 2441
339	ABPD3	2480 2547 2580 2613 2646 2681
336	ABPPD	1860 3054 3673 4634 4649
169	ABRTC	499 831
8	ACO	431 448 449 454 469 472 474 484 485 492 493 531 555 559 561 562 579 580 582 583 585 586 593 594 595 596 597 598 599 600 601 602 603 604 608 613 632 649 653 654 655 657 658 660 663 664 680 681 684 705 706 708 712 736 737 742 746 756 757 759 760 762 783 784 785 786 795 796 797 798 821 847 848 865 870 875 877 878 895 896 898 899 901 902 908 913 918 937 941 943 944 961 962 964 965 967 968 973 988 993 1014 1015 1017 1021 1056 1071 1072 1076 1077 1080 1081 1087 1088 1090 1091 1093 1094 1095 1100 1101 1104 1105 1111 1112 1114 1115 1117 1118 1119 1122 1135 1138 1140 1142 1144 1146 1149 1150 1151 1152 1154 1155 1157 1162 1163 1169 1170 1176 1177 1185 1186 1189 1190 1191 1192 1196 1197 1200 1201 1208 1214 1227 1228 1232 1235 1237 1238 1240 1241 1246 1247 1251 1254 1256 1257 1259 1260 1277 1282 1283 1285 1286 1288 1289 1291 1301 1302 1308 1309 1333 1334 1335 1337 1346 1347 1352 1353 1372 1374 1376 1377 1378 1381 1383 1385 1388 1390 1392 1395 1397 1399 1404 1405 1407 1409 1411 1413 1416 1418 1421 1422 1424 1426 1429 1432 1434 1437 1440 1442 1461 1462 1480 1483 1484 1485 1486 1490 1491 1492 1493 1494 1495 1496 1497 1498 1510 1511 1532 1533 1535 1536 1538 1543 1544 1546 1547 1549 1554 1555 1557 1558 1560 1565 1566 1568 1569 1571 1576 1577 1579 1580 1582 1587 1588 1590 1591 1593 1598 1599 1601 1602 1604 1609 1610 1612 1613 1615 1620 1621 1623 1624 1626 1631 1632 1634 1635 1637 1642 1643 1645 1646 1648 1653 1654 1656 1657 1659 1664 1665 1667 1668 1670 1691 1692 1693 1694 1695 1732 1751 1759 1767 1775 1783 1798 1803 1808 1813 1835 1838 1860 1861 1864 1867 1870 1871 1872 1874 1876 1887 1888 1889 1890 1891 1916 1938 1959 1974 2001 2013 2014 2024 2025 2026 2028 2032 2033 2035 2037 2040 2041

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2268	2272	2273	2275	2277	2280	2281	2287	2302	2303
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3015	3016	3021	3022	3023	3024	3026	3027	3029	3043
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4164	4225	4226	4228	4229	4231	4232	4235	4236	4237
4238	4242	4243	4263	4264	4293	4300	4317	4324	4351
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9 AC1

513	514	520	521	556	564	575	609	618	628
633	691	702	713	743	748	866	880	891	938
946	957	1000	1011	1022	1079	1081	1086	1103	1105
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10 AC2

458	460	468	469	473	474	475	477	482	484
486	488	491	493	507	508	512	513	518	519
520	553	554	555	556	557	565	567	569	571
573	574	606	607	608	609	610	617	620	622
624	626	627	631	632	633	634	635	648	649
652	653	654	657	658	660	664	679	681	692
693	694	696	698	700	711	712	713	714	715
744	746	747	751	752	753	754	757	760	846

849	863	864	865	866	867	881	883	885	887
	8[illegible]	935	936	[illegible]7	[illegible]	9[illegible]	94[illegible]	949	[illegible]51
953	955	956	1001	1002	1003	1005	1007	1009	1020
1021	1022	1023	1024	1075	1076	1078	1079	1085	1086
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2189	2190	2201	2202	2207	2208	2240	2241	2246	2247
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4475	4480	4482	4483	4484	4486	4493	4500	4501	4502
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4628	4630	4649	4653	4658	4669	4671	4673	4675	4677
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4773	4774	4777	4778	4780	4790	4794	4797		

11 AC3

430	453	459	464	465	466	483	485	487	532
536	537	557	566	567	568	569	570	571	572
573	610	612	619	620	621	622	623	624	625
626	634	667	668	669	673	674	694	695	696
697	698	699	700	701	714	820	867	869	882
883	884	885	886	887	888	889	914	917	939
948	949	950	951	952	953	954	955	972	987
1003	1004	1005	1006	1007	1008	1009	1010	1023	1210
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1249	1250	1251	1252	1253	1256	1259	1306	1308	1314
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1620	1623	1624	1626	1630	1631	1634	1635	1637	1641
1642	1645	1646	1648	1652	1653	1656	1657	1659	1663
1664	1667	1668	1670	1698	1701	1704	1707	1713	1714
1719	1720	1725	1726	1734	1753	1761	1769	1777	1785
1800	1805	1810	1815	1822	1895	1910	1918	1932	1940
1953	1961	1976	2004	2005	2011	2016	2017	2020	2021
2028	2033	2036	2037	2038	2044	2045	2050	2051	2055
2060	2071	2072	2073	2077	2085	2088	2089	2093	2104
2105	2106	2110	2118	2121	2122	2126	2137	2138	2139
2143	2151	2154	2155	2159	2170	2171	2194	2205	2206
2212	2219	2220	2224	2244	2245	2251	2256	2257	2260
2261	2268	2273	2276	2277	2278	2284	2285	2290	2291
2295	2300	2311	2312	2313	2317	2325	2328	2329	2333
2344	2345	2346	2350	2358	2361	2362	2366	2377	2378
2379	2383	2391	2394	2395	2399	2410	2411	2434	2445
2446	2452	2459	2460	2464	2484	2485	2491	2496	2497
2500	2501	2508	2513	2516	2517	2518	2524	2525	2530
2531	2535	2540	2551	2552	2553	2557	2565	2568	2569
2573	2584	2585	2586	2590	2598	2601	2602	2606	2617
2618	2619	2623	2631	2634	2635	2639	2650	2651	2674
2685	2686	2692	2699	2700	2704	2723	2724	2729	2734
2735	2740	2745	2746	2751	2755	2758	2762	2766	2771
2772	2776	2780	2784	2789	2793	2799	2803	2806	2809
2812	2919	2920	2921	2928	2929	2930	2931	2942	2943
2949	2953	2985	2986	2989	2990	2991	2995	2996	3003
3009	3010	3013	3014	3098	3142	3143	3147	3148	3149
3150	3152	3153	3154	3155	3160	3163	3164	3165	3166
3183	3188	3452	3477	3487	3488	3489	3490	3495	3500
3502	3521	3522	3571	3573	3574	3591	3593	3594	3596
3597	3601	3603	3605	3612	3637	3678	3682	3698	3699
3700	3702	3707	3720	3721	3725	3728	3730	3734	3745
3747	3752	3754	3758	3776	3782	3785	3790	3810	3815
3817	3820	3833	3838	3841	3847	3848	3851	3853	3864
3866	3870	3876	3878	3883	3885	3889	3902	3904	3908
3913	3922	3924	3925	3931	3935	3939	3956	3958	3976
3983	3986	3997	4010	4011	4014	4017	4039	4065	4067
4068	4071	4073	4075	4078	4085	4087	4089	4091	4093
4095	4097	4100	4103	4106	4120	4123	4124	4126	4131
4133	4134	4135	4165	4166	4168	4174	4180	4186	4191
4284	4285	4287	4345	4346	4348	4350	4356	4361	4449
4455	4495	4512	4519	4523	4532	4533	4535	4539	4540

4602	4607	4608	4622	4626	4632	4650	4655	4660	4691
4787	4788	4791	4792	4793	4795				

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396  ACCU
                NOT USED
768  ACCUI
                  736
770  ACDISP
                  763
389  ACMU
                  453
170  ACOTF
                  828
771  ACRAM
                  759
315  ACSAV
                NOT USED
316  ACSV2
                  935   936  1020  1024
317  ACSVF
                  944   947  1014
318  ACSVS
                  965   968   993  1001
330  ACTST
                 3044  3542  3663
772  ACWAP
                  744   751
379  ADEND
                  477   783  4563
392  ADMU
                NOT USED
358  AE100
                 2183  2423  2663
359  AE10
                 2048  2288  2528
156  AEADC
                  637   721   807  1060  1742  3031
145  AEBKD
                  536
285  AEBUF
                  468   648   679
143  AECCU
                  438
773  AECCUR
                  756
146  AECER
                  661
293  AECMF
                 1072  1095  1119  1122  4715
149  AECOM
                  833
300  AED23
                 1241  1373  3111
304  AEDERR
                 1332
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155 AEDET
837
303 AEDETT
1323 1326 1330 1340 1341 1344
148 AEDIS
832
302 AEDMIT
1288 1291 1301 1353
301 AEDNO
1229
326 AEDSV2
863 864
327 AEDSVF
878 881
328 AEDSVS
899 902
153 AEEOC
3008
291 AEERR
652 1085 1109 1148 1324 1342 1404 1421
142 AEGIS
133
183 AEM10
2019 2087 2120 2153 2218 2259 2327 2360 2393 2458
2499 2567 2600 2633 2698
184 AEM24
2046 2286 2526
144 AEMAD
442
151 AEMIC
835
361 AEP1E
1692 1798 1888 1916 2014 2041 2063 2080 2096 2113
2129 2146 2162 2197 2215 2227
362 AEP2E
1693 1803 1889 1938 2254 2281 2303 2320 2336 2353
2369 2386 2402 2437 2455 2467
363 AEP3E
1694 1808 1890 1959 2494 2521 2543 2560 2576 2593
2609 2626 2642 2677 2695 2707
174 AEPAN
496
180 AEPBI2
2168 2408 2648
181 AEPBI3
2002 2069 2102 2135 2203 2242 2309 2342 2375 2443
2482 2549 2582 2615 2683
345 AEPCD1
2020 2036 2050 2088 2121 2154 2173 2186 2219 2723
2756 2769 2784
346 AEPCD2
2260 2276 2290 2328 2361 2394 2413 2426 2459 2734
2760 2774 2789

347	AEPCD3	2500 2516 2530 2568 2601 2634 2653 2666 2699 2745 2764 2778 2793
352	AEPCF	1871 1876 1879 1901 1922 1944 1965 1984
356	AEPCY	2006 2015 2246 2255 2486 2495
341	AEPD1	2004 2016 2044 2071 2104 2137 2170 2205
342	AEPD2	2244 2256 2284 2311 2344 2377 2410 2445
343	AEPD3	2484 2496 2524 2551 2584 2617 2650 2685
290	AEPDT	NOT USED
364	AEPDVE	1695 1813 1891 1974 2064 2097 2130 2163 2198 2228 2304 2337 2370 2403 2438 2468 2544 2577 2610 2643 2678 2708
366	AEPEF1	1734 1753 2011 2038 2060 2077 2093 2110 2126 2143 2159 2194 2212 2224
367	AEPEF2	1761 1769 2251 2278 2300 2317 2333 2350 2366 2383 2399 2434 2452 2464
368	AEPEF3	1777 1785 2491 2518 2540 2557 2573 2590 2606 2623 2639 2674 2692 2704
349	AEPFT	1713 1719 1725 2023 2263 2503
357	AEPIN1	2207 2216 2447 2456 2687 2696
353	AEPIR	1867 1874
176	AEPP1	1789 1913
177	AEPP2	1792 1935
178	AEPP3	1795 1956
175	AEPPM	842
289	AEPST	1192 1201 1381 2956
351	AEPUF	1864 1981 3092 3101
179	AEPUP	1820 3096
297	AER123	1135 1140 1144 1149 1260 1372
305	AERAM	449 980

186	AERE0	1739 4549
196	AERE10	2111 2351 2591
197	AERE11	2144 2384 2624
198	AERE12	2213 2453 2693
187	AERE1	2061 2301 2541 4175
188	AERE2	2094 2334 2574 4181
189	AERE3	2127 2367 2607 4187
190	AERE4	1343 2160 2400 2640 4193
191	AERE5	1325 2195 2435 2675 4121
192	AERE6	2225 2465 2705 4107
193	AERE7	4110
194	AERE8	2012 2039 2252 2279 2492 2519 3680
195	AERE9	2078 2318 2558 3684
298	AERN0	1248
141	AERSI	130
310	AESAV	NOT USED
147	AESCH	671
154	AESDW	841 906
311	AESV2	553 554 711 715
312	AESVF	562 565 705
313	AESVS	583 586 684 692
295	AESYD	1209 2783
150	AESYN	834
287	AETCY	491 1282 1285 1504 3541 3662
152	AETIM	836
288	AETST	1286 2952

321 AISTK1
594
322 AISTK2
597
323 AISTK3
600
324 AISTK4
603 617
320 AISV2
606 607 631 635
387 ALDU
4626 4691 4702
225 APBUF
NOT USED
161 APCIM
3619 3627
234 APEMAX
2771 3714 3717 3791 3941 3960 3988 4005 4027
235 APERR
1413 3678 3682 4106 4120 4174 4180 4186 4191 4548
232 APFREQ
1480 1486 4043
226 APIP
1388 3049 3090 3325 3368 3380 3551 3640 3686 3690
3700 4052
233 APMDT
3318 3322 4042
231 APMIF
1489 3370 3374 3379 3557 3578 3614 3624 3631 3742
3770 3809 3837 3873 3899
157 APMON
838
400 APP1U
1698 1800 1910 1918 4650
401 APP2U
1701 1805 1932 1940 4655
402 APP3U
1704 1810 1953 1961 4660
399 APPDU
1707 1815 1822 1895 1976 3098 4632
159 APREQ
3344
236 APTAVT
3451 3501 3506 3521 3530 3612
228 APTCP
3762 3787 3799 3813 3877 3917 3932 3954 3969 3979
3984 3995
229 APTCS
3746 3773 3816 3884 3903 4007
230 APTEI
3753 3778 3823 3892 3911 4029

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227  APTEM
                3453  3520  3564  3570  3593  3609  4004  4015
160  APTER
                3333
237  APTITE
                3455  3485  3511  3618  3626
239  APTPMT
                3481  3487  3568  3623
394  ARTC
                 430   532   612   820   869   972   987
393  ASDB
           NOT USED
391  ASDU
                 917  4697
375  ASEAD
                 786   798  4566  4586
206  ASMAD
                 788   800  4568
374  ASSAD
                 784   796  4564  4587  4594
273  ATAI1
                1730  1757  1773  2721  2732  2743
274  ATAI2
                1749  1765  1781  2727  2738  2749
250  ATBUF
                4712  4744  4770  4790
252  ATCDS
                1210  2946  3060  3106  3127  3142  3146  3147  3152  3163
                3565  3671  3713
278  ATCIW
                 519  2919  3012
251  ATCIWC
                 521  2922  3016
163  ATCOPY
                3151  3156  3162  3167
390  ATCP
                 914  4622
265  ATCTP
                 512  2989  3009  3150  3160  3466  3559  3760  3812  3822
                3891  3910  3915
165  ATDIAL
                 504
258  ATDWL
                2755  2945
276  ATECI
                3702
257  ATEMP
           NOT USED
256  ATEOC
           NOT USED
266  ATERR
                1411  3020  3117
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255 ATFST
1462 1484 2942 2960 2962 3087 3104 4047
272 ATHI
507 518 2912 2995
275 ATIMX
2985
253 ATIN
508 2911 2978 2980 3007 3013 3021 3373 3458 3513
3580 3724 3832 3921 4038
254 ATINT
514 2928 2930 3011 3523 3525 3590 3597 3599 3602
3604 3733 3869 3929 3934 3940 3975 3981 3987 3999
4036 4040
164 ATNCY
1471
264 ATNTP
3155 3161 3166 3473 3562 3634 3744 3751 3775 3786
3814 3846 3852 3875 3882 3901 4034
281 ATPE
488
162 ATPEX
839
261 ATPM1
483 1711 1729 1748 2722 2728
262 ATPM2
1717 1756 1764 2733 2739
263 ATPM3
1723 1772 1780 2744 2750
259 ATPP
3148 3153 3164 3566
280 ATPTAB
482
271 ATSCI
NOT USED
241 AVCBT
1395 3311 3315 4531
4409 AVCBUS
4336
245 AVCDB
4076
244 AVCDT
3330 3341 3346 3357 3359 3552 3679 3683 3694 4065
4105 4119 4132 4173 4179 4185 4192 4547
4411 AVCER
4424 4439 4491 4509
4525 AVCK
4524
158 AVCLAS
3331 3342 3358
243 AVCLOG
4123 4165 4284 4345 4532 4539

246	AVCSDB	473 3396 4074
242	AVCVC	1306 1315 4134
4410	AVCVNB	4307 4310 4313 4331 4334 4337
220	AXBUF	908 913 918 1075 1099 1444 4692 4718 4727 4760 4787 4791
4810	AXCFT	4757 4783
221	AXERR	1407 4746 4772
201	AXLOF1	1699 1702 1705 1823 1911 1933 1954 3099
203	AXLOF2	1708 1896
200	AXLON1	1801 1806 1811 1919 1941 1962
202	AXLON2	1816 1977
166	AXRTC	830
168	AXSDC	524 840
167	AXWDT	1125 1740
4916	BBUF	214
4918	BCR1	NOT USED
4919	BCR2	NOT USED
4917	BDIN	215
5164	BERR	216

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                    216
5165  BERRF
                NOT USED
4649  BPAN
                    173
4950  BPD1
                    337
4951  BPD2
                    338
4952  BPD3
                    339
4668  BPIN
                  4651  4656  4661
4939  BPPD
                    336
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4622 ERTC

169

91 C0

431 454 472 582 613 680 742 762 821 870
898 964 973 988 1071 1189 1200 1346 1352 1483
1485 1514 1691 1834 1887 1983 2032 2047 2178 2181
2272 2287 2418 2421 2512 2527 2658 2661 2829 2842
2853 2957 2981 3006 3043 3086 3100 3103 3378 3401
3416 3505 3598 3622 3639 3685 3771 3844 3937 4046
4051 4102 4138 4242 4263 4351 4426 4443 4444 4479
4492 4511 4529 4703 4796 4867 4873 4879 4885

102 C125

4114

100 C15

NOT USED

92 C1

460 475 486 487 531 579 585 655 663 747
849 895 901 961 967 1088 1094 1112 1152 1191
1283 1289 1316 1335 1348 1461 1533 1544 1555 1566
1577 1588 1599 1610 1621 1632 1643 1654 1665 1839
1900 1904 1980 2013 2025 2040 2062 2079 2086 2095
2112 2119 2128 2145 2152 2161 2188 2196 2214 2226
2253 2265 2280 2302 2319 2326 2335 2352 2359 2368
2385 2392 2401 2428 2436 2454 2466 2493 2505 2520
2542 2559 2566 2575 2592 2599 2608 2625 2632 2641
2668 2676 2694 2706 2955 2977 3024 3062 3121 3139
3184 3187 3188 3339 3405 3420 3601 3605 3699 3796
3798 4111 4122 4164 4441 4538 4550 4590 4597 4607
4749 4775

93 C2

1118 1137 1921 1925 3070 3133 3347 3355 3360

94 C3

618 1943 1947 3078 3137

101 C48

743

95 C4

564 627 691 880 946 1000 1141 1964 1968 3707

96 C5

NOT USED

97 C6

1208 2787 4522

98 C7

4653 4658

99 C8

1145

108 CCB0

581 897 963 4598

109 CCB1

NOT USED

116 CCCF

826

113 CCCU

733

106 CCEZ

650 685 994 1082 1106 1136 1139 1143 1147 1164
1171 1178 1382 1389 1396 1414 1423 1733 1752 1760
1768 1776 1784 1799 1804 1809 1814 1836 1877 1917
1939 1960 1975 2992 3312 3319 3326 3369 3371 3482
3531 3576 3616 4079 4739 4765

110 CCNZ

1123 1236 1239 1255 1258 1406 1408 1410 1412 1481
1862 1868 3050 3091 3093 3332 3343 3691 4104 4109
4714 4716

114 CCPH

528

111 CCSF

429 551

112 CCZN

1837 2027 2175 2267 2415 2507 2655 2993 3372 3456
3512 3558 3575 3579 3706 3957 3977 4030

107 CCZP

1512 3936 4497 4517

84 CM100

NOT USED

87 CM10

2081 2114 2147 2321 2354 2387 2561 2594 2627

83 CM110

NOT USED

86 CM16

458

90 CM1

464 575 628 667 702 748 891 957 1011 1211
1870 1881 2947 3313 3320 3703 4071 4131 4585 4606

85 CM20

3181

89 CM2

3709

88 CM6

760

948 COTF1

958

967 COTF2

963

971 COTF3

966

997 COTF4

994

1002 COTF5

1012

934 COTF

170

5077 CSAV

315

5080 CSV2

316

5082 CSVF

317

5084 CSVS

318

5109 CTST

330

46 D0

469 539 649 658 659 660 664 681 700 765
812 852 912 1009 1026 1058 1091 1093 1115 1117
1127 1155 1157 1158 1185 1204 1217 1230 1232 1237
1240 1249 1251 1256 1259 1263 1293 1334 1337 1355
1446 1476 1490 1492 1500 1505 1515 1517 1536 1537
1538 1539 1547 1549 1550 1558 1560 1561 1569 1571
1572 1580 1582 1583 1591 1593 1594 1602 1604 1605
1613 1615 1616 1624 1626 1627 1635 1637 1638 1646
1648 1649 1657 1659 1660 1668 1670 1671 1714 1732
1751 1759 1767 1775 1783 1825 1835 1843 1986 2001
2005 2007 2017 2024 2035 2045 2049 2073 2085 2106
2118 2139 2151 2184 2187 2208 2230 2241 2245 2247
2257 2275 2285 2289 2313 2325 2346 2358 2379 2391
2424 2427 2448 2470 2481 2485 2487 2497 2515 2525
2529 2553 2565 2586 2598 2619 2631 2664 2667 2688
2710 2724 2735 2746 2758 2796 2800 2815 2862 2891
2899 2923 2927 2933 2963 3017 3027 3029 3045 3124
3125 3126 3149 3154 3157 3165 3168 3186 3190 3375
3381 3418 3422 3427 3459 3460 3476 3488 3490 3494
3495 3500 3502 3507 3514 3522 3524 3533 3549 3553
3567 3571 3573 3581 3584 3591 3594 3595 3596 3608
3610 3636 3638 3642 3664 3669 3674 3676 3681 3687
3715 3720 3728 3730 3756 3758 3780 3782 3785 3792
3794 3800 3810 3821 3838 3843 3847 3864 3866 3876
3878 3890 3909 3913 3920 3922 3926 3930 3933 3942
3943 3961 3963 3966 3982 3989 3991 3993 4006 4049
4053 4087 4088 4112 4115 4125 4126 4128 4135 4150
4160 4167 4170 4231 4235 4534 4537 4541 4544 4551
4604 4625 4635 4663 4683 4698 4700 4705 4713 4725
4734 4745 4752 4753 4754 4755 4763 4771 4778 4780
4781 4794 4797 4798 4869 4875 4881 4887

56 D10

1384 1575 1647 4363 4432 4456 4482 4502 4542

73 D116

848

74 D118

847

57 D11

1587 1590 1658 3055 4364 4378 4416 4457 4471 4483
4540

58 D12

753 1586 1669 3398 4352 4427 4445 4480 4493 4515

59 D13

1598 1601 3413 4425 4442

60 D14

754 1278 1597 2917 3001 3547 3667 4248 4269 4305
4329 4422 4437 4489 4507

61 D15

1057 1438 1609 1612 2961 3411 3471 3486 3561 3633
3748 3755 3779 3783 3818 3839 3842 3879 3886 3905
4353 4513 4732 4786

62 D16

1608 4510

63 D17

580 896 962 1620 1623

64 D18

1619

65 D19

1631 1634

47 D1

557 567 610 620 634 654 657 698 714 867
883 909 939 949 1007 1023 1076 1079 1092 1162
1231 1233 1250 1252 1331 1333 1441 1493 1495 1506
1508 1532 1535 1548 1720 2028 2033 2068 2072 2174
2182 2189 2190 2264 2268 2273 2308 2312 2414 2422
2429 2430 2508 2513 2548 2552 2654 2662 2669 2670
2729 2740 2751 2762 2772 2804 2837 2848 2861 2887
2897 2959 3028 3046 3066 3120 3123 3463 3498 3532
3543 3625 3632 3745 3747 3759 3784 3811 3815 3817
3840 3880 3883 3885 3887 3902 3904 3914 4089 4090
4124 4143 4301 4325 4419 4434 4449 4610 4628 4669
4693 4719 4721 4728 4730 4748 4751 4761 4779

66 D20

1630

67 D21

1642 1645

68 D22

1641

69 D23

1653 1656

70 D24

1652

71 D25

1664 1667

72 D26

1663

48 D2

493 569 622 653 696 885 951 1005 1100 1103
1116 1169 1234 1253 1433 1496 1498 1511 1513 1531
1559 1726 2101 2105 2220 2341 2345 2460 2504 2581
2585 2700 2766 2770 2775 2776 2779 2807 2835 2850
2889 3119 3615 3721 3725 3749 3752 3754 3772 3776
3819 3820 3833 3841 3845 3853 3889 3906 3908 4039
4091 4092 4152 4168 4226 4237 4240 4261 4448 4455
4630 4671 4695 4722 4724 4731 4733 4747 4788

49 D3

571 624 694 757 887 953 1003 1087 1090 1156
1176 1543 1546 1570 2021 2037 2054 2134 2138 2261
2277 2294 2374 2378 2501 2517 2534 2614 2618 2780
2799 2810 2839 2895 3023 3026 3734 3790 3848 3851
3870 3924 3925 3931 3935 3939 3956 3958 3976 3983
3986 3997 4010 4011 4014 4017 4073 4093 4094 4145
4166 4292 4316 4361 4362 4673 4774 4777 4792 4795

50 D4

441 573 574 626 889 890 955 956 1039 1086
1196 1425 1542 1581 2089 2167 2171 2329 2407 2411
2569 2647 2651 2803 2813 3022 3112 4095 4096 4154
4225 4229 4241 4262 4287 4356 4447 4454 4573 4603
4675 4773 4793

51 D5

444 1044 1111 1114 1163 1170 1177 1183 1186 1190
1197 1417 1554 1557 1592 2122 2202 2206 2362 2442
2446 2602 2682 2686 2801 2806 3074 3114 3135 4085
4086 4108 4139 4147 4285 4297 4321 4357 4495 4677

52 D6

445 1048 1110 1376 1398 1430 1553 1603 2155 2395
2635 2809 4097 4098 4156 4228 4232 4236 4260 4348
4453 4512 4679

53 D7

446 1052 1151 1154 1391 1565 1568 1614 2055 2295
2535 2812 3426 4078 4100 4103 4238 4244 4265 4346
4486 4504 4681

54 D8

1150 1564 1625 2051 2291 2531 2757 2761 2765 4293
4299 4317 4323 4358 4366 4368 4417 4430 4450 4459
4461 4484 4500 4535 4738

55 D9

1576 1579 1636 3082 4294 4318 4359 4375 4379 4382
4431 4451 4468 4472 4475 4501 4533

5258 DEND

379

76 DETS

1361 3384 3651 4199

41 DM12

746

45 DM1

556 609 633 713 866 938 1022

44 DM2

555 608 632 712 865 937 1021

43 DM4

693 1002

42 DM7

752

78 DPMD

4041 4530

1849 E100
358
1848 E10
359
882 EADC1
892
901 EADC2
897
904 EADC3
900
917 EADC4
911
862 EADC
156
4563 EBKD1
4574
4560 EBKD
145
4578 EBKDE
4569 4575
5025 EBUF
285
746 ECCU1
749
730 ECCU
143
769 ECCUI
737
765 ECCUR
734 739 773
720 ECER
146
5036 ECMF
293
1098 ECOM1
1082
1122 ECOM2
1106
1070 ECOM
149
1127 ECOMR
1120 1123
5054 ED23
300
5253 EDERR
304
1308 EDET1
1351
1330 EDET2
1319
1360 EDET32
1318

1346 EDET3
1311 1327
1300 EDET
155
1358 EDETI
1302
1359 EDETM
1309
1355 EDETR
1304
5060 EDETT
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1036 EDIS
148
1060 EDISH
1041 1046 1050 1054
854 EDLAY
846
5059 EDMIT
302
5055 EDNO
301
5099 EDSAV
NOT USED
5102 EDSV2
326
5104 EDSVF
327
5106 EDSVS
328
1460 EEOC
153
5218 EERR0
NOT USED
5219 EERR1
NOT USED
5220 EERR2
NOT USED
5221 EERR3
NOT USED
5222 EERR4
NOT USED
5223 EERR5
NOT USED
5208 EERR
291
5209 EERRF
NOT USED
566 EGIS1
576
585 EGIS2
581

643 EGIS3
584 587
688 EGIS4
685
693 EGIS5
703
550 EGIS
142
528 EHLT
NOT USED
2886 EM10
183
2894 EM24
184
779 EMAD
144
807 EMADE
789 801
812 EMADR
805
1243 EMIC1
1236 1239
1262 EMIC2
1255 1258
1224 EMIC
151
5140 EP1E
361
5141 EP2E
362
5142 EP3E
363
1747 EPAN1
1733
1685 EPAN
174
1740 EPANE1
1817
1737 EPANE
1754 1762 1770 1778 1786
2853 EPBI1
NOT USED
2842 EPBI2
180
2829 EPBI3
181
2827 EPBI
NOT USED
2861 EPBIR
2834 2847 2858
5122 EPCD1
345

5132 EPCD2
346
5133 EPCD3
347
5146 EPCF
352
1846 EPCY
356
5117 EPD1
341
5118 EPD2
342
5119 EPD3
343
5034 EPDT
290
5143 EPDVE
364
5243 EPEF1
366
5246 EPEF2
367
5249 EPEF3
368
1479 EPEOC
1468
1835 EPFI1
1841
1833 EPFI
1712 1718 1724
1843 EPFIR
1837
5136 EPFT
349
1847 EPIN1
357
5147 EPIR
353
2059 EPP10
2003
2093 EPP11
2070
2126 EPP12
2103
2159 EPP13
2136
2194 EPP14
2169
2224 EPP15
2204
1997 EPP1
176

2299 EPP20
2243
2333 EPP21
2310
2366 EPP22
2343
2399 EPP23
2376
2434 EPP24
2409
2464 EPP25
2444
2237 EPP2
177
2539 EPP30
2483
2573 EPP31
2550
2606 EPP32
2583
2639 EPP33
2616
2674 EPP34
2649
2704 EPP35
2684
2477 EPP3
178
1874 EPPM1
1865
1904 EPPM2
1884
1925 EPPM3
1907
1947 EPPM4
1928
1968 EPPM5
1950
1859 EPPM
175
1986 EPPMR
1877 1902 1923 1945 1966 1971
5033 EPST
289
5145 EPUF
351
2717 EPUP
179
2799 EPUPS
2785 2790 2794
5049 ER123
297

1530 ERE0
186
1640 ERE10
196
1651 ERE11
197
1662 ERE12
198
1541 ERE1
187
1552 ERE2
188
1563 ERE3
189
1574 ERE4
190
1585 ERE5
191
1596 ERE6
192
1607 ERE7
193
1618 ERE8
194
1629 ERE9
195
5050 ERN0
298
428 ERSI
141
663 ERTC1
650
648 ERTC
NOT USED
5026 ERTCF
NOT USED
852 ERTS
844
5067 ESAV
310
819 ESCH
147
1415 ESDW1
1406 1408 1410 1412
1369 ESDW
154
619 ESTK1
629
592 ESTK
429 551
5070 ESV2
311

```
5072  ESVF
                312
5074  ESVS
                313
1211  ESYA1
               1215
1216  ESYA2
               1213
1206  ESYA
               1161  1168  1175  1181
5037  ESYD
                295
1160  ESYN1
               1139
1167  ESYN2
               1143
1174  ESYN3
               1147
1182  ESYN4
               1165  1172  1179
1181  ESYN4A
               1136
1195  ESYN5
               1188
1203  ESYN6
               1164  1171  1178  1193  1199
1134  ESYN
                150
 484  ETCPY
                489
5030  ETCY
                287
1510  ETEOC1
               1507
1514  ETEOC2
               1509  1512
1503  ETEOC
               1474
1288  ETIM1
               1280
1274  ETIM
                152
1293  ETIMR
          NOT USED
5028  ETST
                288
1361  EVCVC
               1350
 474  EZDB
                478
  18  FC10
               4678
```

19	FC11	4668
20	FC12	4670
21	FC13	4672
22	FC14	4674
23	FC15	4676
30	FC17	4680
13	FC1	919 4694 4699
14	FC2	4696
15	FC3	4624 4627 4633
32	FC41	433 455 822 872 975 4704
33	FC42	533 989
34	FC43	432 614 871 915 974
35	FC44	4868
36	FC45	4874
37	FC46	4880
38	FC47	4886
16	FC4	4629
4801	H0006	NOT USED
2870	H0009	2856
1266	H000E	1247
2867	H000F	2855
1451	H0010	1422
1267	H0030	1228
4802	H007F	4764
2869	H0090	2845
2866	H00F0	2844

415 H0200
448
1989 H0400
1861 1872
2868 H0900
2832
2865 H0F00
2831
543 H0FFF
492
4214 H1T1
4309
4215 H1T2
4311
4216 H2T1
4333
4217 H2T2
4335
410 H3000
NOT USED
416 H3BFF
4565
411 H3FFF
785 1077 1080 1101 1104
4803 H7F00
4737
409 H7FFF
1491 1494 1497 4720 4723 4729
413 HEC00
795
414 HECCF
797
1449 HF800
1377
1450 HFFEF
1405
119 INEN
435 615 824 873
5092 ISTK1
321
5093 ISTK2
322
5094 ISTK3
323
5095 ISTK4
324
5096 ISTK5
NOT USED
5088 ISV0
NOT USED
5089 ISV1
NOT USED

5090	ISV2	
		320
5091	ISV3	
		NOT USED
5087	ISV	
		NOT USED
5261	LAC	
		4
5262	LBP	
		125 137 209 308 333 371 382 405
5270	LBX	
		4617 4640 4687 4709 4807 4859
5271	LDB	
		4894 5064 5112 5150 5159
5272	LDU	
		NOT USED
5269	LEB	
		4557 4582
5263	LER	
		423 547 727 776 816 859 929 1521
5264	LES	
		1033 1067 1131 1221 1271 1297 1366 1456
5265	LPP	
		1679 1853 1994 2234 2474 2714 2819 2874
5267	LPR	
		3298 3387 3435 3536 3646 3655 3739 3767 3807 3828
		3861 3896 3949
5266	LTP	
		2906 2937 2972 3038 3172 3194
5268	LVC	
		4059 4197 4220 4280 4340 4388 4414 4528
3952	P10	
		3824 3893
3973	P12	
		NOT USED
4001	P14	
		3957 3977
4004	P14A	
		3945 3964 3992
4025	P18	
		3962 3971 3990 4000 4022
4029	P18A	
		3803 3944 4019
4041	P20	
		3857
4051	P21	
		4030
3768	P2	
		3732 3735
3808	P3	
		3726

```
3830  P5
                3722
3862  P6
                3834
3897  P7
                3867  3872
3918  P8
                3763
4963  PEUF
                 225
3475  PC15
                3467
3469  PC1
                3456
3504  PC2
                3482  3491
3530  PC3
                3512  3517
3437  PCIM
                 161
4977  PEMAX
                 234
5178  PERR
                 235
5179  PERRF
          NOT USED
4970  PFREQ
                 232
4964  PIP
                 226
3325  PM01
                3319
3338  PM02
                3323  3326  3332
3340  PM03
                3352
3356  PM04
                3365
3346  PM05
                3343
3647  PMAS
                3672
4971  PMDT
                 233
3384  PMHD
                3350  3363
4969  PMIF
                 231
3304  PMON
                 157
3381  PMRET
                3369  3372  3377
```

3690 PR0
3675
3706 PR1
3710
3659 PREQ
159
3678 PRER8
3697
3682 PRER9
3706
3669 PRET
3691
3651 PRHD
3695
3652 PRLD
3696
3388 PSWCH
3307
3430 PSWFC
3402 3406 3408
3431 PSWFD
3417 3421 3423
3803 PT18A
3902
3857 PT20
3856
3561 PT2
3558
3563 PT3
3560
3590 PT4
3585
3601 PT5
3592
3607 PT6
3579 3583
3611 PT7

```
3611  PT7
                3600
3622  PT8
                3616
4972  PTAVT
                 236
4966  PTCP
                 228
4967  PTCS
                 229
4968  PTEI
                 230
4965  PTEM
                 227
3639  PTEND
                3575  3576  3586  3620  3628
```

3538	PTER	160					
4973	PTITE	237					
4974	PTPMT	239					
3549	PTRET	3555					
5154	SEAD	375					
120	SELF	686	688	995	997	1375	
4589	SMAD1	4592					
4595	SMAD2	4599	4609				
4606	SMAD3	4596					
4585	SMAD	206					
4602	SMADE	4593					
5153	SSAD	374					
2965	T0	2924	2931	2943			
2966	T1	2929	3128				
2967	T2	3130					
2968	T3	NOT USED					
3208	TAI1	273					
3209	TAI2	274					
5006	TBUF	250					
5008	TCDS	252					
3236	TCIW	278					
5007	TCIWC	251					
3181	TCOPY	163					
5021	TCTP	265					
3139	TD1	3129	3136				
3133	TD2	3115	3131				

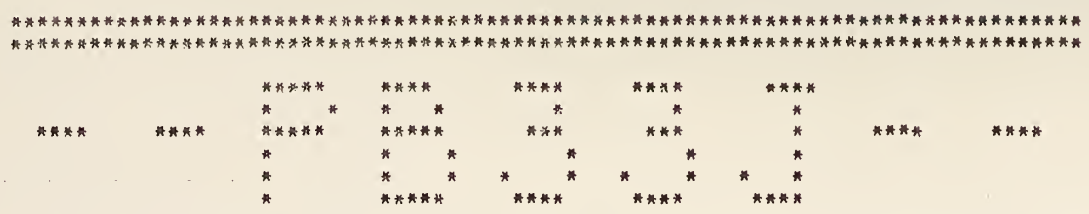
```
3137  TD3
                3132
3146  TDCH
                3107
3111  TDIAL
                 165
3141  TDSEL
                3134  3138
5014  TDWL
                 258
3214  TECI
                 276
5013  TEMP
                 257
5012  TEOC
                 256
5204  TERR0     NOT USED
5205  TERR1     NOT USED
5200  TERR
                 266
5201  TERRF     NOT USED
2995  TEZ
                2992
5011  TEST
                 255
3011  TGZ
                2994  3004
3207  THI
                 272
3210  TIMX
                 275
5009  TIN
                 253
5010  TINT
                 254
3182  TLOOP
                3189
3006  TLZ
                2993
2924  TMSG
                2915  2918
3041  TNCY
                 164
3135  TND2
                3113
3160  TNDC
                3050  3144
5020  TNTP
                 264
```

```
2975  TNXT
                2932  2998  3002
3016  TOL
                2984  2988
3291  TPE
                 281
2909  TPEX
                 162
5017  TPM1
                 261
5018  TPM2
                 262
5019  TPM3
                 263
3252  TPTAB
                 280
3108  TPUE
                3091  3094
2960  TPSET
                2944  2954
3206  TSCI
                 271
3070  TSD2
                3065
3078  TSD3
                3073
2940  TSST
                2925
3060  TSYNC     NOT USED
3089  TSYNCE
                3068  3076  3081  3084
3086  TSYNCR
                3057  3067  3075  3083
4114  VC01
                4104  4109
4130  VC02
                4116
4210  VC31
                4291
4211  VC32
                4296
4212  VC41
                4315
4213  VC42
                4320
4984  VCBT
                 241
4529  VCBUS
                4409  4521
4392  VCC0
                4243  4264  4300  4324  4389  4418  4433  4485  4503
```

4389	VCCP	4350 4519
4987	VCDB	245
4221	VCDHK	4163
4983	VCDT	244
4171	VCER1	4069
4177	VCER2	4144 4146 4148
4183	VCER3	4151 4153 4155 4157
4189	VCER4	4227 4230 4233
4545	VCER	4411
4164	VCGTF	4140
4199	VCHD	4067
4337	VCHE	NOT USED
4283	VCHFE	4162 4250 4255 4258 4271 4277
4378	VCK0	4364
4332	VCK1	4373
4417	VCK21	4370
4416	VCK2	4381 4385
4430	VCK3	4369 4377 4380
4447	VCK5	4428
4471	VCK6	4477
4475	VCK7	4466
4479	VCK8	4463 4474
4500	VCK9	4462 4470 4473
4354	VCK	4525
4344	VCKFE	4276
4060	VCLAS	158

```
4200  VCLD
      4068
4993  VCLOG
       243
4408  VCM15
      4371  4372  4374  4376  4383  4464  4465  4467  4469  4476
4202  VCMA
      4142
4204  VCMOF
      4159  4161
4203  VCMT
      4149
4518  VCNK
      4498
4111  VCRET
      4079  4176  4182  4188  4194
4912  VCSDB
       246
4206  VCST1
      4275
4207  VCST2
      4254
4208  VCST3
      4256  4257
4986  VCVC
       242  1361
4538  VCVNB
      4410  4481  4497  4517
4955  XBUF
       220
4770  XCCE
      4765
4727  XCER
      4716
4811  XCFT
      4810  4855
4854  XCFTE
      4855
4959  XCIWC
NOT USED
4960  XCIWP
NOT USED
5174  XERR0
NOT USED
5175  XERR1
NOT USED
5168  XERR
       221
5169  XERRF
NOT USED
```

```
4757  XFO1
                4741
4783  XFO2
                4767
4737  XFOW
                4714
4855  XIMX
                4740  4766
4872  XLOF1
                 201
4884  XLOF2
                 203
4866  XLON1
                 200
4878  XLON2
                 202
4744  XMCE
                4739
4957  XOCW1
              NOT USED
4958  XOCW2
              NOT USED
4691  XRTC
                 166
4712  XSDC
                 168
4956  XSDN
              NOT USED
4702  XWDT
                 167
```



-- 3 0 -- DATE 10-10-75 TIME 17.284 ID = G5 CS-F.0

```
1 0000                .TITLE PBD33J.'          ... P B D 3 3 J ...'
```

```
REVISION-F 10/02/73                                          09/26/75   10.197
PBD33J                  ... P B D 3 3 J ...                  PAGE NUMBER    2
TOP PAGE OF MEMORY (FF00 TO FFFF)

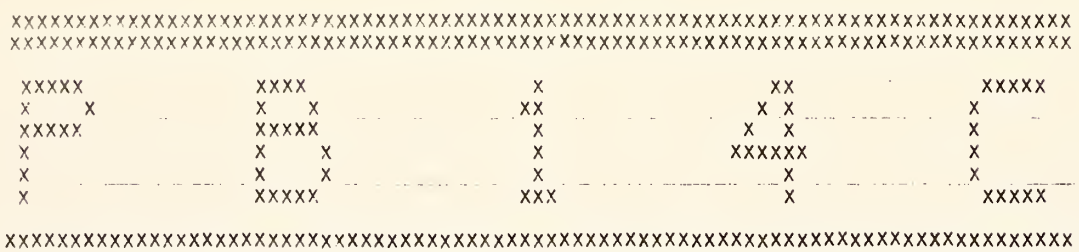
    4 0000                  .LIST   1
    5 0000                  .ASECT
    6 0000 FF00 A           .=X'FF00                 ; SET LOCATION COUNTER TO TOP PAGE
    7 FF00          ;
    8 FF00 FFF8 A           .=.+X'F8
    9 FFF8 2104 A           JMP     .+5              ; 'CATCHER IN THE DYE'
   10 FFF9 2103 A           JMP     .+4              ; 'CATCHER IN THE DYE'
   11 FFFA          ;
   12 FFFA FFCF A           .WORD   X'FFCF           ; CCU ROM START ADDRESS + X'CF
   13 FFFB 25FF A           JMP     @.-1
   14 FFFC          ;
   15 FFFC FFD9 A           .WORD   X'FFD9           ; CCU ROM START ADDRESS + X'D9
   16 FFFD 25FF A           JMP     @.-1
   17 FFFF          ;
   18 FFFE 2000 A           JMP     0                ; RESTART INITIALIZATION
   19 FFFF          ;
   20 FFFF 21FF A           JMP     .                ; LOOP FOR CCU PSEUDO HALT
   21 0000                  .END

   ******      0 ERRORS IN ASSEMBLY   ******
```

REVISION-F 10/02/73 09/24/75 10.197
PDP33J ... PAGE HEADER ... PAGE 3
TOP PAGE OF MEMORY (FE00 TO FFFF)

E6DC 0000

PROGRAM LISTING OF PBD14C - BUS PREEMPT CONTROL UNIT
PROGRAM FOR WASHINGTON INSTALLATION



```
$$    PB14C ENTERED CS-F.0 AT 13.506 FROM REMOTE  0-08-04

0001  $      SNUMB   PB14C
0002  $      IDENT   D00391-IMP16XREF
0003  $$     USERID  D00391$##
0004  $      OPTION  FORTRAN,NOMAP
0005  $$     SELECT  G02771/NATIONAL/POINTER
0006* $      OPTIONS FORTRAN,NOMAP
0007* $$     SELECT  G02771/NATIONAL/ACCOUNT
0009* $      OBJECT                                    Y09.711032175......00
0010* $$     SELECT  LIBRARY/SURCHK/A3XXX
0011* $      OBJECT                                    G13.092021475A3XXX000
0013* $      EXECUTE
0014* $      LIMITS  01,4K
0015* $      SYSOUT  P*,ORG
0016* $      OPTIONS FORTRAN,NOMAP
0017* $$     SELECT  G02771/NATIONAL/ASMIMP16
0018* $      OBJECT                                    Y10.768070275BINSCH00
0020* $      OBJECT                                    Y10.769070275STRING00
0022* $      OBJECT                                    Y10.769070275LABEL000
0024* $      OBJECT                                    Y10.770070275LCVAL000
0026* $      OBJECT                                    Y10.770070275I2HEX000
0028* $      OBJECT                                    Y10.771070275DEC2I000
0030* $      OBJECT                                    Y10.771070275UNPACK00
0032* $      OBJECT                                    Y10.772070275SYMBOL00
0034* $      OBJECT                                    Y10.772070275HEX2I000
0036* $      OBJECT                                    Y10.773070275ASC2I000
0038* $      OBJECT                                    Y10.773070275FORM0000
0040* $      OBJECT                                    Y10.773070275NXCHAR00
0042* $      OBJECT                                    Y10.774070275PSECT000
0044* $      OBJECT                                    Y10.774070275REMOVE00
0046* $      OBJECT                                    Y10.775070275OR000000
0048* $      OBJECT                                    Y10.775070275AND00000
0050* $      OBJECT                                    Y10.775070275INSERT00
0052* $      OBJECT                                    Y10.776070275ERRCOL00
0054* $      OBJECT                                    Y10.776070275EVAL0000
0056* $      OBJECT                                    Y10.777070275DATA0000
0058* $      OBJECT                                    Y10.777070275ASSIGN00
0060* $      OBJECT                                    Y10.777070275PREFORM00
0062* $      OBJECT                                    Y10.778070275LCNTL000
0064* $      OBJECT                                    Y10.778070275MEMREF00
0066* $      OBJECT                                    Y10.778070275MISCIN00
0068* $      OBJECT                                    Y10.779070275LCM00000
0070* $      OBJECT                                    Y10.779070275XMTREC00
0072* $      OBJECT                                    Y10.779070275NXPAGE00
0074* $      OBJECT                                    Y10.780070275NXITEM00
```

```
0076* $      OBJECT                                                  Y10.780070275......00
0078* $      OBJECT                                                  Y10.780070275ACNTL000
0080* $      OBJECT                                                  Y10.781070275LIST0000
0082* $      OBJECT                                                  Y10.781070275REGINT00
0084* $      OBJECT                                                  Y10.782070275INST0000
0086* $      OBJECT                                                  Y10.782070275000000000
0088* $      OBJECT                                                  Y10.782070275SYMVAL00
0090* $      OBJECT                                                  Y10.783070275EXTSYM00
0092* $      OBJECT                                                  Y10.783070275NXTSYM00
0094* $      OBJECT                                                  Y10.783070275ADDSYM00
0096* $      OBJECT                                                  Y10.784070275ADPART00
0098* $      OBJECT                                                  Y10.784070275ERREPT00
0100* $      OBJECT                                                  Y10.784070275DIRECT00
0102* $      OBJECT                                                  Y10.785070275BOCNTL00
0104* $      OBJECT                                                  Y10.785070275GENRLM00
0106  $      EXECUTE
0107  $      SET      6,19
0108  $      LIMITS   15,23K,,7500
0109  $      REMOTE   06
0110  $      FILE     10,X1S,40L
0111  $$     PRMFL    09,R/W,S,D00391/AOUT
0112  $$     SELECT   D00391/EAC1002$######
0113* $      INCODE   IBMEL
0114  $      INCODE   IBMEL
0115  $$     SELECT   D00391/EBP0826$######
0116* $      INCODE   IBMEL
0117  $      INCODE   IBMEL
0118  $$     SELECT   D00391/EER1001$######
0119* $      INCODE   IBMEL
0120  $      INCODE   IBMEL
0121  $$     SELECT   D00391/EES0826$######
0122* $      INCODE   IBMEL
0123  $      INCODE   IBMEL
0124  $$     SELECT   D00391/EPP0819$######
0125* $      INCODE   IBMEL
0126  $      INCODE   IBMEL
0127  $$     SELECT   D00391/ETP1002$######
0128* $      INCODE   IBMEL
0129  $      INCODE   IBMEL
0130  $$     SELECT   D00391/EPR1010$######
0131* $      INCODE   IBMEL
0132  $      INCODE   IBMEL
0133  $$     SELECT   D00391/EVC1001$######
0134* $      INCODE   IBMEL
0135  $      INCODE   IBMEL
0136  $$     SELECT   D00391/EEB0826$######
0137* $      INCODE   IBMEL
0138  $      INCODE   IBMEL
0139  $$     SELECT   D00391/EBX0826$######
0140* $      INCODE   IBMEL
0141  $      INCODE   IBMEL
0142  $$     SELECT   D00391/EDB1010$######
0143* $      INCODE   IBMEL
0144  $      IF       /19,ENDJOB
0145  $      OPTION   FORTRAN,NOMAP
0146  $      LIBRARY  L1
0147  $$     SELECT   G02771/NATIONAL/XREF
0148* $      OBJECT                                                  Y16.706071475......00
0150  $      EXECUTE
0151  $      LIMIT    ,20K
0152  $$     PRMFL    L1,R,R,USERLIB/UTILITY/BUTIL
0153  $      FILE     10,X1R
0154  $      FILE     11,X2R,40L
0155  $      FILE     S1,X3R,44R
```

```
0156  $      ENDJOB
 TO    CARD    INT     JO    0054

 * BEGIN ACTIVITY -01-  GELOAD   10/10/75   SW=010000000000
  * NORMAL TERMINATION     AT 011743 I=5020 SW=010000000000

     START 13.517      LINES     21      PROC  0.0001      I/O   0.000    IU  5   MEMORY    5K
     STOP  13.517      LIMIT   5000      LIMIT 0.0100      LIMIT          CU  5   M*T       17
     SWAP   0.000
     LAPSE  0.000   FC D TYPE     BUSY    IP/AT    FP/RT    IS/#C MS/#E    ADDRESS T#

                    R* R D191 *     21        0        0        1     1    0-08-01
                    P*  SYOUT
                    L* R D191 *    273        0        0      528   528R   0-08-05

      LIST     21 LINES AT STA.  G5

RESOURCE UNITS USED, ACTIVITY -01-      0.00
***RESOURCE UNITS USED, JOB TOTAL-      0.00

 * BEGIN ACTIVITY -02-  GELOAD   10/10/75   SW=014000200000
  * NORMAL TERMINATION     AT 013613 I=5020 SW=014000200000

     START 13.531      LINES   5625      PROC  0.0659      I/O   0.006    IU  5   MEMORY   23K
     STOP  13.659      LIMIT   7500      LIMIT 0.1500      LIMIT          CU  5   M*T    11566
     SWAP   0.000
     LAPSE  0.128   FC D TYPE     BUSY    IP/AT    FP/RT    IS/#C MS/#E    ADDRESS T#

                    I* R D191 *   8950        0      228      228   228    0-08-01
                    R* R D191 *   1811        0        0       46    46    0-08-01
                    06  SYOUT
                    10 S D191 *   2436        0        0      480   480    0-08-02
                    09 R D191 P    724        0       16       20    20    0-08-05
                    P*  SYOUT
                    L* R D191 *    997        0        0      528   528R   0-08-05

      LIST     22 LINES AT STA.  G5
      RC-06  5603 LINES AT STA.  G5

RESOURCE UNITS USED, ACTIVITY -02-      2.53
***RESOURCE UNITS USED, JOB TOTAL-      2.54

 * BEGIN ACTIVITY -03-  GELOAD   10/10/75   SW=000000200000
SORT ENGAGED - VERSION: F/8
            FILE 11 UNSUITABLE FOR COLLATION.
MEMORY: 023416  LINKS: 00044 INPUT: 0320/DOUBLE  OUTPUT: 0320/DOUBLE  COLLATION: 0362/DOUBLE  TOURNAMENT: 000541 ENTRIES
            END OF FILE ON 10.  RECORDS READ = 00006146.  RECORDS ACCEPTED = 00006146.  RECORDS DELETED = 00000000.
            MERGING 000006 STRINGS 08 WAYS.
            LINK UTILIZATION.       ALLOCATED 00044   BORROWED 00000   USED 00007
            RECORDS INPUT = 00006146.  RECORDS OUTPUT = 00006146.
SORT TERMINATES.
  * NORMAL TERMINATION     AT 013403 I=5020 SW=000000200000

     START 13.661      LINES   1995      PROC  0.0046      I/O   0.004    IU  5   MEMORY   20K
     STOP  13.677      LIMIT   5000      LIMIT 0.0500      LIMIT          CU  5   M*T     1122
     SWAP   0.001
     LAPSE  0.015   FC D TYPE     BUSY    IP/AT    FP/RT    IS/#C MS/#E    ADDRESS T#

                    10 R D191 *   2189        0        0      480   480    0-08-02
                    R* R D191 *     96        0        0        3     3    0-08-01
                    L1 R D191 P     48        0        0      120   120R   0-08-03
```

```
S1 R D191 *   3836      0       0      528    528R   0-08-02
P*  SYOUT
L* R [illegible]1 *   [illegible]044      0       [illegible]      [illegible]      0 [illegible] 05

      LIST      26 LINES AT STA.  G5
      RC-06   1969 LINES AT STA.  G5

RESOURCE UNITS USED, ACTIVITY -03-      0.26
***RESOURCE UNITS USED, JOB TOTAL-      2.80
```

SNUMB = PB14C, ACTIVITY # = 01, REPORT CODE = 74, RECORD COUNT = 000021

```
PB14C 01  10-10-75   13.517                                                                    PAGE      1

  ORIGIN   DATE MODULE ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION

                        SUBPROGRAMS INCLUDED IN DECK.

                  $      OPTION  FORTRAN,NOMAP
                  $      OPTIONS FORTRAN,NOMAP

                        SUBPROGRAMS OBTAINED FROM SYSTEM LIBRARY

                                        RANGE                SIZE
                  ALLOCATED CORE    000000 THRU 011777       012000
                     RELOCATABLE    007062 THRU 011777       002716
                  $      SYSOUT  P*,ORG

                  FCB AND BUFFER SPACE
                     AVAILABLE      000101 THRU 007061       006761
                     FILE CTRL BLKS 006732 THRU 007062       000131
                     MAXIMUM BUFFER SPACE REQUIRED           001202

                       3K, IS THE MINIMUM MEMORY NEEDED TO LOAD THIS ACTIVITY WITH ALL FILES OPEN     730517 F/8
                  000204 LOCATIONS REQUIRED FOR LOAD TABLE
                  EXECUTION PROGRAM ENTERED AT  011772   THROUGH  .FSETU
```

SNUMB = PB14C, ACTIVITY # = 02, REPORT CODE = 74, RECORD COUNT = 000022

```
PB14C 02  10-10-75   13.531                                                    PAGE      1
   ORIGIN   DATE MODULE ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION

                        SUBPROGRAMS INCLUDED IN DECK.

                $       OPTIONS FORTRAN,NOMAP

                        SUBPROGRAMS OBTAINED FROM SYSTEM LIBRARY

                                              RANGE                SIZE
                ALLOCATED CORE      000000 THRU 055777          056000
                   RELOCATABLE      004422 THRU 055777          051356
                $       REMOTE  06
                $       FILE    10,X1S,40L
                $       PRMFL   09,R/W,S,D00391/AOUT

                FCB AND BUFFER SPACE
                   AVAILABLE        000101 THRU 004421          004321
                   FILE CTRL BLKS   004170 THRU 004422          000233
                   MAXIMUM BUFFER SPACE REQUIRED                003105

                    23K, IS THE MINIMUM MEMORY NEEDED TO LOAD THIS ACTIVITY WITH ALL FILES OPEN      730517 F/8
                001446 LOCATIONS REQUIRED FOR LOAD TABLE
                EXECUTION PROGRAM ENTERED AT  033506   THROUGH  .FSETU
```

SNUMB = PB14C, ACTIVITY # = 02, REPORT CODE = 06, RECORD COUNT = 005603

```
1 0000                .TITLE PBD14C,' ... P B D 1 4 C ...'
```

```
0000                    .LIST   LAC
0000          ;
0000          ;                    ... A S S E M B L Y   C O N S T A N T S ...
0000          ;
0000 0000 A AC0     =       0               ; ACCUMULATOR 0
0000 0001 A AC1     =       1               ; ACCUMULATOR 1
0000 0002 A AC2     =       2               ; ACCUMULATOR 2
0000 0003 A AC3     =       3               ; ACCUMULATOR 3
0000          ;
0000 0001 A FC1     =       X'01            ; FUNCTION CODE 1, WRITE WORD 1
0000 0002 A FC2     =       X'02            ; FUNCTION CODE 2, WRITE WORD 2
0000 0003 A FC3     =       X'03            ; FUNCTION CODE 3, READ WORD 1
0000 0004 A FC4     =       X'04            ; FUNCTION CODE 4, READ WORD 2
0000          ;
0000 0010 A FC10    =       X'10            ; FUNCTION CODE 10, READ THUMBWHEEL 6
0000 0011 A FC11    =       X'11            ; FUNCTION CODE 11, READ THUMBWHEEL 1
0000 0012 A FC12    =       X'12            ; FUNCTION CODE 12, READ THUMBWHEEL 2
0000 0013 A FC13    =       X'13            ; FUNCTION CODE 13, READ THUMBWHEEL 3
0000 0014 A FC14    =       X'14            ; FUNCTION CODE 14, READ THUMBWHEEL 4
0000 0015 A FC15    =       X'15            ; FUNCTION CODE 15, READ THUMBWHEEL 5
0000          ;
0000          ;                                   NOTE: FUNCTION CODES ENDING IN
0000          ;                                         6 CANNOT BE USED FOR RIN
0000          ;                                         INSTRUCTIONS DUE TO
0000          ;                                         CONFLICT WITH TTY ROUTINE
0000          ;
0000 0017 A FC17    =       X'17            ; FUNCTION CODE 17, READ THUMBWHEEL 7
0000          ;
0000 0041 A FC41    =       X'41            ; FUNCTION CODE 41, RESET PULSE
0000 0042 A FC42    =       X'42            ; FUNCTION CODE 42, START PULSE
0000 0043 A FC43    =       X'43            ; FUNCTION CODE 43, STOP PULSE
0000 0044 A FC44    =       X'44            ; FUNCTION CODE 44, TURN ON LIGHT 1
0000 0045 A FC45    =       X'45            ; FUNCTION CODE 45, TURN OFF LIGHT 1
0000 0046 A FC46    =       X'46            ; FUNCTION CODE 46, TURN ON LIGHT 2
0000 0047 A FC47    =       X'47            ; FUNCTION CODE 47, TURN OFF LIGHT 2
0000          ;
0000          ;                    ... DISPLACEMENT CONSTANTS ...
0000 FFF4 A DM12    =       -12
0000 FFF9 A DM7     =       -7
0000 FFFC A DM4     =       -4
0000 FFFE A DM2     =       -2
0000 FFFF A DM1     =       -1
0000 0000 A D0      =       0
0000 0001 A D1      =       1
0000 0002 A D2      =       2
0000 0003 A D3      =       3
0000 0004 A D4      =       4
0000 0005 A D5      =       5
0000 0006 A D6      =       6
0000 0007 A D7      =       7
0000 0008 A D8      =       8
0000 0009 A D9      =       9
```

ASSEMBLY CONSTANTS

```
   56 0000 000A A D10     =       10
   57 0000 000B A D11     =       11
   58 0000 000C A D12     =       12
   59 0000 000D A D13     =       13
   60 0000 000E A D14     =       14
   61 0000 000F A D15     =       15
   62 0000 0010 A D16     =       16
   63 0000 0011 A D17     =       17
   64 0000 0012 A D18     =       18
   65 0000 0013 A D19     =       19
   66 0000 0014 A D20     =       20
   67 0000 0015 A D21     =       21
   68 0000 0016 A D22     =       22
   69 0000 0017 A D23     =       23
   70 0000 0018 A D24     =       24
   71 0000 0019 A D25     =       25
   72 0000 001A A D26     =       26
   73 0000 0074 A D116    =       116
   74 0000 0076 A D118    =       118
   75 0000          ;
   76 0000 0001 A DETS    =       1               ; NUMBER OF DETECTORS FOR PBD14C .......
   77 0000          ;
   78 0000 0019 A DPMD    =       25              ; MINIMUM DURATION OF A PREEMPT
   79 0000          ;                                  ( 0.1 SEC UNITS)
   80 0000          ;
   81 0000          ;
   82 0000          ;                          ... IMMEDIATE DATA CONSTANTS ...
   83 0000 FF92 A CM110   =       -110
   84 0000 FF9C A CM100   =       -100
   85 0000 FFEC A CM20    =       -20
   86 0000 FFF0 A CM16    =       -16
   87 0000 FFF6 A CM10    =       -10
   88 0000 FFFA A CM6     =       -6
   89 0000 FFFE A CM2     =       -2
   90 0000 FFFF A CM1     =       -1
   91 0000 0000 A C0      =       0
   92 0000 0001 A C1      =       1
   93 0000 0002 A C2      =       2
   94 0000 0003 A C3      =       3
   95 0000 0004 A C4      =       4
   96 0000 0005 A C5      =       5
   97 0000 0006 A C6      =       6
   98 0000 0007 A C7      =       7
   99 0000 0008 A C8      =       8
  100 0000 000F A C15     =       15
  101 0000 0030 A C48     =       48
  102 0000 007D A C125    =       125
```

```
                .PAGE
                ;
                ;                   ••• BOC CONDITION CODES •••
0001 A CCEZ     =       X'1         ; CONDITION CODE 1 (AC0).EQ.0
0002 A CCZP     =       X'2         ; CONDITION CODE 2 (AC0) ZERO, POSITIVE
0003 A CCB0     =       X'3         ; CONDITION CODE 3 AC0 BIT 0 = 1
0004 A CCB1     =       X'4         ; CONDITION CODE 4 AC0 BIT 1 = 1
0005 A CCNZ     =       X'5         ; CONDITION CODE 5 (AC0).NE.0
0008 A CCSF     =       X'8         ; CONDITION CODE 8 STACK FULL
000B A CCZN     =       X'B         ; CONDITION CODE 11 (AC0).LE.0
000C A CCCU     =       X'C         ; CONDITION CODE 12 CCU IN SYSTEM
000D A CCPH     =       X'D         ; CONDITION CODE 13 INITIALIZATION
                ;                   ;    PSEUDO HALT
000E A CCCF     =       X'E         ; CONDITION CODE 14 CATCH ON THE FLY
                ;
                ;                   ••• CONTROL FLAGS •••
0001 A INEN     =       1           ; INTERRUPT ENABLE FLAG
0002 A SELF     =       2           ; SELECT FLAG
                ;
```

```
REVISION-F 10/02/73                                          10/10/75   13.533
PBD14C                  ... P B D 1 4 C ...                  PAGE NUMBER    5
ASSEMBLY CONSTANTS

 122 0000                  .PAGE
 123 0000          ;                    ... BASE PAGE CONSTANTS ...
 124 0000          ;                        FOR UNUSED PROGRAM ENTRY POINTS IN PBD14C
 125 0000 1A88 A PTER     =        X'1A88
 126 0000 1AE6 A PREQ     =        X'1AE6
 127 0000 1A4E A PCIM     =        X'1A4E
 128 0000          ;
```

```
  131 0000                .LIST   LBP
  132 0000          ;
  133 0000          ;                     ... B A S E   P A G E ...
  134 0000                .BSECT
  135 0000          ;                     ... TRANSFER TO RESTART INITIALIZATION ROUTINE...
  136 0000 2420 A           JMP     @AERSI
  137 0001          ;
  138 0001          ;                     ... TRANSFER TO GENERAL INTERRUPT SERVICING ROUTINE
  139 0001 2421 A           JMP     @AEGIS
  140 0002          ;
```

```
  143 0002                .LIST   LBP
  144 0002        ;
  145 0002                .ASECT
  146 0000 0020 A         .=X'20
  147 0020 1000 A AERSI:  .WORD   ERSI            ; RESTART INITIALIZATION ROUTINE
  148 0021 1041 A AEGIS:  .WORD   EGIS            ; GENERAL INTERRUPT SERVICING ROUTINE
  149 0022 10C2 A AECCU:  .WORD   ECCU            ; CCU INITIALIZATION ROUTINE
  150 0023 10E0 A AEMAD:  .WORD   EMAD            ; INITIAL RAM ADDRESS TEST ROUTINE
  151 0024 1E00 A AEBKD:  .WORD   EBKD            ; BACKGROUND PROGRAM MONITOR
  152 0025 10BF A AECER:  .WORD   ECER            ; CLOCK ERROR ROUTINE
  153 0026 10F3 A AESCH:  .WORD   ESCH            ; EXECUTIVE SCHEDULING ROUTINE
  154 0027 1200 A AEDIS:  .WORD   EDIS            ; DISCONNECT MONITOR
  155 0028 1212 A AECOM:  .WORD   ECOM            ; COMMAND MONITORING ROUTINE
  156 0029 123F A AESYN:  .WORD   ESYN            ; SYNCHRONIZATION ROUTINE
  157 002A 1282 A AEMIC:  .WORD   EMIC            ; INTERCONNECT DATA MONITOR ROUTINE
  158 002B 12A3 A AETIM:  .WORD   ETIM            ; EXECUTIVE TIMING ROUTINE
  159 002C 131B A AEEOC:  .WORD   EEOC            ; END OF CYCLE ROUTINE
  160 002D 12E0 A AESDW:  .WORD   ESDW            ; STATUS DISPLAY ROUTINE
  161 002E 12B2 A AEDET:  .WORD   EDET            ; DETECTOR MONITORING ROUTINE
  162 002F 110F A AEADC:  .WORD   EADC            ; AUTODISCONNECT ROUTINE
  163 0030 1A00 A APMON:  .WORD   PMON            ; PREEMPT MONITOR ROUTINE
  164 0031 1C19 A AVCLAS: .WORD   VCLAS           ; VEHICLE CLASSIFICATION ROUTINE
  165 0032 1AE6 A APREQ:  .WORD   PREQ            ; PREEMPT REQUEST ROUTINE
  166 0033 1A88 A APTER:  .WORD   PTER            ; PREEMPT TERMINATION ROUTINE
  167 0034 1A4F A APCIM:  .WORD   PCIM            ; ROUTINE USED TO RESTORE CI
  168 0035 1800 A ATPEX:  .WORD   TPEX            ; TIMING PLAN EXECUTION ROUTINE
  169 0036 18C9 A ATCOPY: .WORD   TCOPY           ; TIMING PLAN COPY ROUTINE
  170 0037 1866 A ATNCY:  .WORD   TNCY            ; NEXT TIMING PLAN CYCLE ROUTINE
  171 0038 1896 A ATDIAL: .WORD   TDIAL           ; INIT ENTRY TO TNCY ROUTINE
  172 0039 1F28 A AXRTC:  .WORD   XRTC            ; RTC DATA OUTPUT SEQUENCE ROUTINE
  173 003A 1F32 A AXWDT:  .WORD   XWDT            ; RESET WATCHDOG TIMER ROUTINE
  174 003B 1F36 A AXSDC:  .WORD   XSDC            ; FORMAT OUTPUT COMMANDS ROUTINE
  175 003C 1F00 A ABRTC:  .WORD   BRTC            ; RTC DATA INPUT SEQUENCE ROUTINE
  176 003D 1143 A ACOTF:  .WORD   COTF            ; CATCH ON THE FLY ROUTINE FOR CHECKOUT ........
  177 003E        ;
  178 003E        ;                       ... PROG. PANEL PROGRAM POINTERS ...
  179 003E 1F0D A ABPAN:  .WORD   BPAN            ; PROG. PANEL PARAMETER INPUT ROUTINE
  180 003F 1400 A AEPAN:  .WORD   EPAN            ; PROG. PANEL INITIALIZATION ROUTINE
  181 0040 146E A AEPPM:  .WORD   EPPM            ; PROG PANEL MONITOR ROUTINE
  182 0041 14C4 A AEPP1:  .WORD   EPP1            ; ROUTINE TO PROCESS PROG. PANEL PLAN 1
  183 0042 1578 A AEPP2:  .WORD   EPP2            ; ROUTINE TO PROCESS PROG. PANEL PLAN 2
  184 0043 162C A AEPP3:  .WORD   EPP3            ; ROUTINE TO PROCESS PROG. PANEL PLAN 3
  185 0044 16E0 A AEPUP:  .WORD   EPUP            ; UPDATE PROG. PANEL DATA
  186 0045 1733 A AEPBI2: .WORD   EPBI2           ; CONVERT 2 BINARY-CODED DIGITS
  187 0046 1726 A AEPBI3: .WORD   EPBI3           ; CONVERT 3 BINARY-CODED DIGITS
  188 0047        ;
  189 0047 174D A AEM10:  .WORD   EM10            ; ROUTINE TO MULTIPLY AN INTEGER BY 10
  190 0048 1752 A AEM24:  .WORD   EM24            ; ROUTINE TO MULTIPLY AN INTEGER BY 24
  191 0049        ;
  192 0049 1340 A AERE0:  .WORD   ERE0            ; ERROR RECORDING ROUTINE
  193 004A 1349 A AERE1:  .WORD   ERE1            ; ERROR RECORDING ROUTINE
  194 004B 1352 A AERE2:  .WORD   ERE2            ; ERROR RECORDING ROUTINE
```

BASE PAGE - PROGRAM ENTRY POINTS

```
  195 004C 135B A AERE3:  .WORD   ERE3            ; ERROR RECORDING ROUTINE
  196 004D 1364 A AERE4:  .WORD   ERE4            ; ERROR RECORDING ROUTINE
  197 004E 136D A AERE5:  .WORD   ERE5            ; ERROR RECORDING ROUTINE
  198 004F 1376 A AERE6:  .WORD   ERE6            ; ERROR RECORDING ROUTINE
  199 0050 137F A AERE7:  .WORD   ERE7            ; ERROR RECORDING ROUTINE
  200 0051 1388 A AERE8:  .WORD   ERE8            ; ERROR RECORDING ROUTINE
  201 0052 1391 A AERE9:  .WORD   ERE9            ; ERROR RECORDING ROUTINE
  202 0053 139A A AERE10: .WORD   ERE10           ; ERROR RECORDING ROUTINE
  203 0054 13A3 A AERE11: .WORD   ERE11           ; ERROR RECORDING ROUTINE
  204 0055 13AC A AERE12: .WORD   ERE12           ; ERROR RECORDING ROUTINE
  205 0056        ;
  206 0056 1F97 A AXLON1: .WORD   XLON1           ; ROUTINE TO TURN STATUS LIGHT ON
  207 0057 1F9A A AXLOF1: .WORD   XLOF1           ; ROUTINE TO TURN STATUS LIGHT OFF
  208 0058 1F9D A AXLON2: .WORD   XLON2           ; ROUTINE TO TURN STATUS LIGHT ON
  209 0059 1FA0 A AXLOF2: .WORD   XLOF2           ; ROUTINE TO TURN STATUS LIGHT OFF
  210 005A        ;
  211 005A        ;                          ... SELF TEST ENTRY POINTS ...
  212 005A 1E0C A ASMAD:  .WORD   SMAD            ; RAM ADDRESS TEST
```

BASE PAGE - DATA POINTERS

```
 215 0058                .LIST   LBP
 216 005B 0068 A         .=X'68
 217 0068        ;
 218 0068        ; DATA INPUT CPC DATA BASE POINTERS
 219 0068        ;
 220 0068 3100 A ABBUF:  .WORD   BBUF            ; DATA INPUT CPC DATA BASE
 221 0069 3100 A ABDIN:  .WORD   BDIN            ; DISCRETE INPUT WORD
 222 006A 32BE A ABERR:  .WORD   BERR            ; ERROR BUFFER
 223 006B        ;
 224 006B        ; DATA OUTPUT CPC DATA BASE POINTERS
 225 006B        ;
 226 006B 3119 A AXBUF:  .WORD   XBUF            ; DATA OUTPUT CPC DATA BASE
 227 006C 32BF A AXERR:  .WORD   XERR            ; ERROR BUFFER
 228 006D        ;
 229 006D        ; PREEMPT CPC DATA BASE POINTERS
 230 006D        ;
 231 006D 311E A APBUF:  .WORD   PBUF            ; PREEMPT CPC DATA BASE
 232 006E 311E A APIP:   .WORD   PIP                   ; PREEMPT IN PROGRESS FLAG
 233 006F 311F A APTEM:  .WORD   PTEM                  ; TEMPORARY STORAGE LOCATION
 234 0070 3120 A APTCP:  .WORD   PTCP            ; ADDRESS OF PRIMARY CONTRACTIBLE INT
 235 0071 3121 A APTCS:  .WORD   PTCS            ; ADDRESS OF SECONDARY CONTRACTIBLE INT
 236 0072 3122 A APTEI:  .WORD   PTEI            ; ADDRESS OF EXTENDIBLE INT
 237 0073 3123 A APMIF:  .WORD   PMIF                  ; PREEMPT MONITOR INDEX FLAG
 238 0074 3126 A APFREQ: .WORD   PFREQ                 ; PREEMPT REQUEST FLAG
 239 0075 3127 A APMDT:  .WORD   PMDT                  ; PREEMPT MINIMUM DURATION TIMER
 240 0076 312B A APEMAX: .WORD   PEMAX           ; MAXIMUM EXTENSION FOR PREEMPT
 241 0077 32C4 A APERR:  .WORD   PERR            ; PREEMPT ERROR BUFFER
 242 0078 3128 A APTAVT: .WORD   PTAVT           ; UNEXPIRED PREEMPT EXTENSION TIME
 243 0079 3129 A APTITE: .WORD   PTITE           ; DISP OF INT TO RECEIVE UNEXPIRED
 244 007A                                        ;    PREEMPT EXTENSION TIME
 245 007A 312A A APTPMT: .WORD   PTPMT           ; BASE ADDRESS OF MASTER TIMING PLAN
 246 007B        ;
 247 007B 3130 A AVCBT:  .WORD   VCBT            ; TIMER FOR RECENT BUS CLASS.
 248 007C 3131 A AVCVC:  .WORD   VCVC            ; VEHICLE COUNTERS (ONE PER DETECTOR)
 249 007D 3165 A AVCLOG: .WORD   VCLOG                 ; BEGINNING LOCATION OF VEHICLE LOG
 250 007E 312F A AVCDT:  .WORD   VCDT                  ; LOCATION OF DETECTOR INDEX WORD
 251 007F 3151 A AVCDB:  .WORD   VCDB            ; TEMPORARY DATA BASE
 252 0080 3000 A AVCSDB: .WORD   VCSDB           ; BUS DETECTOR SIGNATURE DATA BASE
 253 0081        ;
 254 0081        ;TIMING PLAN CPC DATA BASE POINTERS
 255 0081        ;
 256 0081 3171 A ATBUF:  .WORD   TBUF                  ; BEGINNING LOC OF TIMING PLAN DATA BASE
 257 0082 3171 A ATCIWC: .WORD   TCIWC           ; CURRENT COMMAND INDEX WORD
 258 0083 3172 A ATCDS:  .WORD   TCDS                  ; CURRENT DIAL SETTING--1, 2, OR 3
 259 0084 3173 A ATIN:   .WORD   TIN                   ;CURRENT INTERVAL INDEX
 260 0085 3174 A ATINT:  .WORD   TINT                  ; CURRENT INTERVAL TIMER
 261 0086 3175 A ATFST:  .WORD   TFST                  ; WAIT FOR SYNC START FLAG
 262 0087 3176 A ATEOC:  .WORD   TEOC                  ; END OF CYCLE FLAG
 263 0088 3177 A ATEMP:  .WORD   TEMP                  ; TEMPORARY LOCATION
 264 0089 3178 A ATDWL:  .WORD   TDWL                  ; MAXIMUM WAIT FOR SYNC START DWELL
 265 008A 008A A ATPP:   .WORD   ATPP            ; POINTER TO MASTER TP POINTERS
 266 008B                                        ;    (MUST PRECEDE ATPM1,ATPM2,ATPM3)
```

BASE PAGE - DATA POINTERS

```
 267 008B 3178 A ATPM1:  .WORD   TPM1            ; BEGINNING LOC OF MASTER TP, DIAL 1
 268 008C 318F A ATPM2:  .WORD   TPM2            ; BEGINNING LOC OF MASTER TP, DIAL 2
 269 008D 31A3 A ATPM3:  .WORD   TPM3            ; BEGINNING LOC OF MASTER TP, DIAL 3
 270 008E 31B7 A ATNTP:  .WORD   TNTP            ; BEGINNING LOC OF NEXT TP TABLE
 271 008F 31CB A ATCTP:  .WORD   TCTP            ; BEGINNING LOC OF CURRENT TP TABLE
 272 0090 32D9 A ATERR:  .WORD   TERR            ; TIMING PLAN CPC ERROR FLAGS, COUNTERS,
 273 0091                                        ; DATA
 274 0091        ;
 275 0091        ; TIMING PLAN TABLES POINTERS
 276 0091        ;
 277 0091 18D3 A ATSCI:  .WORD   TSCI            ; SYNC.CONTRACTIBLE INTERVAL
 278 0092 18D4 A ATHI:   .WORD   THI             ; TRANSFER/HOLD INTERVAL
 279 0093 18D5 A ATAI1:  .WORD   TAI1            ; FIRST ADJ INT INDEX
 280 0094 18D6 A ATAI2:  .WORD   TAI2            ; SECOND ADJ INT INDEX
 281 0095 18D7 A ATIMX:  .WORD   TIMX            ; MAXIMUM VALUE FOR TIN
 282 0096 18D8 A ATECI:  .WORD   TECI            ; BEGINNING LOC OF EXTENDIBLE/
 283 0097                                        ; CONTRACTIBLE INTERVAL DATA TABLES
 284 0097 1918 A ATCIW:  .WORD   TCIW            ; BEGINNING LOC OF COMMAND INDEX WORD
 285 0098                                        ; TABLE
 286 0098 192C A ATPTAB: .WORD   TPTAB           ; BEGINNING LOC OF TIMING PLAN TABLES
 287 0099 1967 A ATPE:   .WORD   TPE             ; END LOCATION OF TIMING PLAN TABLE ROM
 288 009A        ;
 289 009A        ;EXECUTIVE CPC DATA BASE POINTERS
 290 009A        ;
 291 009A 31DF A AEBUF:  .WORD   EBUF            ; BEGINNING LOC OF EXECUTIVE CPC DATA
 292 009B                                        ; BASE
 293 009B 31E1 A AETCY:  .WORD   ETCY            ; TIMING PLAN CYCLE TIMER
 294 009C 31E0 A AETST:  .WORD   ETST            ; WAIT FOR SYNC START DWELL TIMER
 295 009D 31E4 A AEPST:  .WORD   EPST            ; START PULSE INDICATOR
 296 009E 31E5 A AEPDT:  .WORD   EPDT            ; START PULSE DURATION TIMER
 297 009F 32DE A AEERR:  .WORD   EERR            ; ERROR BUFFER
 298 00A0        ;
 299 00A0 31E6 A AECMF:  .WORD   ECMF            ; TEMPORARY FLAG FOR ECOM
 300 00A1        ;
 301 00A1 31E7 A AESYD:  .WORD   ESYD            ; SYNCH DATA BUFFER
 302 00A2        ;
 303 00A2 31F9 A AER123: .WORD   ER123           ; RESET SELECT INTERNAL VALUE
 304 00A3 31FA A AERNO:  .WORD   ERNO            ; RESET SELECT DATA BUFFER
 305 00A4        ;
 306 00A4 31FD A AED23:  .WORD   ED23            ; DIAL SELECT INTERNAL VALUE
 307 00A5 31FE A AEDNO:  .WORD   EDNO            ; DIAL SELECT DATA BUFFER
 308 00A6 3201 A AEDMIT: .WORD   EDMIT           ; DETECTOR MONITORING INTERVAL TIMER
 309 00A7 3202 A AEDETT: .WORD   EDETT           ; TEMP STORAGE FOR DET MONITORING
 310 00A8 333C A AEDERR: .WORD   EDERR           ; DETECTOR ERROR BUFFER
 311 00A9 3C00 A AERAM:  .WORD   X'3C00          ; FIRST LOCATION IN FREE RAM (3C00-3FFF)
```

```
  314 00AA                .LIST   LBP
  315 00AA        ;
  316 00AA 3203 A AESAV:  .WORD   ESAV            ; GENERAL INTERRUPT SAVE AREA POINTERS
  317 00AB 3205 A AESV2:  .WORD   ESV2
  318 00AC 3207 A AESVF:  .WORD   ESVF
  319 00AD 3218 A AESVS:  .WORD   ESVS
  320 00AE        ;
  321 00AE 3219 A ACSAV:  .WORD   CSAV              ; SNAPSHOT SAVE AREA
  322 00AF 321B A ACSV2:  .WORD   CSV2
  323 00B0 321D A ACSVF:  .WORD   CSVF
  324 00B1 322E A ACSVS:  .WORD   CSVS
  325 00B2        ;
  326 00B2 3231 A AISV2:  .WORD   ISV2            ; STACK FULL SAVE AREA POINTERS
  327 00B3 3233 A AISTK1: .WORD   ISTK1
  328 00B4 3234 A AISTK2: .WORD   ISTK2
  329 00B5 3235 A AISTK3: .WORD   ISTK3
  330 00B6 3236 A AISTK4: .WORD   ISTK4
  331 00B7        ;
  332 00B7 3245 A AEDSV2: .WORD   EDSV2           ; DISCONNECT SAVE AREA POINTERS
  333 00B8 3247 A AEDSVF: .WORD   EDSVF
  334 00B9 3258 A AEDSVS: .WORD   EDSVS
  335 00BA        ;
  336 00BA 3259 A ACTST:  .WORD   CTST              ; OPTIONAL USE SAVE AREA POINTER
```

```
 339 00BB                .LIST   LBP
 340 00BB        ;
 341 00BB        ;                   ... PROG. PANEL DATA POINTERS ...
 342 00BB 3103 A ABPPD:  .WORD   BPPD                ; PANEL DISCRETE INPUT WORD
 343 00BC 3104 A ABPD1:  .WORD   BPD1                ; TW SWITCH DATA INPUT      DIAL 1
 344 00BD 3108 A ABPD2:  .WORD   BPD2                ; TW SWITCH DATA INPUT      DIAL 2
 345 00BE 3112 A ABPD3:  .WORD   BPD3                ; TW SWITCH DATA INPUT      DIAL 3
 346 00BF        ;
 347 00BF 3261 A AEPD1:  .WORD   EPD1                ; PANEL WORKING BUFFER,     DIAL 1
 348 00C0 3268 A AEPD2:  .WORD   EPD2                ; PANEL WORKING BUFFER,     DIAL 2
 349 00C1 326F A AEPD3:  .WORD   EPD3                ; PANEL WORKING BUFFER,     DIAL 3
 350 00C2        ;
 351 00C2 3276 A AEPCD1: .WORD   EPCD1               ; PANEL UPDATE BUFFER,      DIAL 1
 352 00C3 3280 A AEPCD2: .WORD   EPCD2               ; PANEL UPDATE BUFFER,      DIAL 2
 353 00C4 328A A AEPCD3: .WORD   EPCD3               ; PANEL UPDATE BUFFER,      DIAL 3
 354 00C5        ;
 355 00C5 3294 A AEPFT:  .WORD   EPFT                ; FIXED INTERVAL SUMS
 356 00C6        ;
 357 00C6 329B A AEPUF:  .WORD   EPUF                ; PANEL UPDATE FLAG
 358 00C7 329C A AEPCF:  .WORD   EPCF            ; PROG PANEL MONITOR COMPUTATION FLAG
 359 00C8 329D A AEPIR:  .WORD   EPIR            ; STATE OF PROG PANEL INPUT REQ SWITCH
 360 00C9        ;
 361 00C9        ;                   ... DATA CONSTANTS ...
 362 00C9 146A A AEPCY:  .WORD   EPCY            ; MAXIMUM CYCLE LENGTH
 363 00CA 1468 A AEPIN1: .WORD   EPIN1           ; LIMIT ON MAXIMUM EXTENSION
 364 00CB 146D A AE100:  .WORD   E100            ; PERCENTAGE CONVERSION CONSTANT
 365 00CC 146C A AE10:   .WORD   E10             ; CONSTANT FOR DIVISION
 366 00CD        ;
 367 00CD 3297 A AEP1E:  .WORD   EP1E            ; ERROR FLAG FOR PLAN 1
 368 00CE 3298 A AEP2E:  .WORD   EP2E            ; ERROR FLAG FOR PLAN 2
 369 00CF 3299 A AEP3E:  .WORD   EP3E            ; ERROR FLAG FOR PLAN 3
 370 00D0 329A A AEPDVE: .WORD   EPDVE           ; ERROR FLAG FOR DATA VALIDITY
 371 00D1        ;
 372 00D1 32EB A AEPEF1: .WORD   EPEF1           ; PROG. PANEL ERROR DATA FOR PLAN 1
 373 00D2 3306 A AEPEF2: .WORD   EPEF2           ; PROG. PANEL ERROR DATA FOR PLAN 2
 374 00D3 3321 A AEPEF3: .WORD   EPEF3           ; PROG. PANEL ERROR DATA FOR PLAN 3
```

BASE PAGE - SELF TEST DATA POINTERS

```
 377 00D4                .LIST   LBP
 378 00D4        ;
 379 00D4        ;                       ... RAM ADDRESS TEST DATA POINTERS ...
 380 00D4 329E A ASSAD:  .WORD   SSAD            ; RAM ADDRESS TEST START ADDRESS
 381 00D5 329F A ASEAD:  .WORD   SEAD            ; RAM ADDRESS TEST END ADDRESS
 382 00D6        ;
 383 00D6        ; END OF DATA BASE POINTER
 384 00D6        ;
 385 00D6 337C A ADEND:  .WORD   DEND                    ; END LOCATION OF DATA BASE
```

BASE PAGE - PERIPHERAL DEVICE ADDRESSES

```
388 00D7                .LIST   LBP
389 00D7 00E0 A         .=X'E0
390 00E0        ;
391 00E0        ; PERIPHERAL DEVICE ADDRESSES
392 00E0        ;
393 00E0 0080 A ALDU:   .WORD   1*128                   ; LDU DEVICE ADDRESS
394 00E1 0100 A ARLSMU: .WORD   2*128                   ; RLSMU DEVICE ADDRESS
395 00E2 0180 A ACMU:   .WORD   3*128                   ; CMU DEVICE ADDRESS
396 00E3 0200 A ATCP:   .WORD   4*128                   ; TCP DEVICE ADDRESS
397 00E4 0280 A ASDU:   .WORD   5*128                   ; SDU DEVICE ADDRESS
398 00E5 0300 A ADMU:   .WORD   6*128                   ; DMU DEVICE ADDRESS
399 00E6 0380 A ASDB:   .WORD   7*128                   ; SDB DEVICE ADDRESS
400 00E7 0400 A ARTC:   .WORD   8*128                   ; RTC DEVICE ADDRESS
401 00E8        ;
402 00E8 1F80 A ACCU:   .WORD   63*128                  ; CCU DEVICE ADDRESS
403 00E9        ;
404 00E9        ;                   ... PERIPHERAL DEVICE ADDRESSES FOR PROG. PANEL ...
405 00E9 0500 A APPDU:  .WORD   10*128          ; DISCRETES
406 00EA 0580 A APP1U:  .WORD   11*128          ; PLAN 1 PARAMETERS
407 00EB 0600 A APP2U:  .WORD   12*128          ; PLAN 2 PARAMETERS
408 00EC 0680 A APP3U:  .WORD   13*128          ; PLAN 3 PARAMETERS
```

BASE PAGE - COMMON HEXADECIMAL CONSTANTS

```
  411 00ED                      .LIST   LBP
  412 00ED 00F0 A               .=X'F0
  413 00F0            ;
  414 00F0            ;                       ... COMMON HEXADECIMAL CONSTANTS ...
  415 00F0 7FFF A H7FFF:  .WORD   X'7FFF          ; HEX CONSTANT (BIT 15 RESET)
  416 00F1 3000 A H3000:  .WORD   X'3000          ; DATA BASE START ADDRESS
  417 00F2 3FFF A H3FFF:  .WORD   X'3FFF          ; BITS 15, 14 RESET
  418 00F3                                        ; RAM END ADDRESS
  419 00F3 EC00 A HEC00:  .WORD   X'EC00          ; START ADDRESS OF UNUSED CCU RAM
  420 00F4 ECCF A HECCF:  .WORD   X'ECCF          ; END ADDRESS OF UNUSED CCU RAM
  421 00F5 0200 A H0200:  .WORD   X'0200          ; RTS DO INSTRUCTION
  422 00F6 3BFF A H3BFF:  .WORD   X'3BFF          ; END ADDRESS FOR RTC RAM ADDRESS TEST
```

```
423 00F7                .PAGE
424 00F7                .ASECT
425 00F7 1000 A         .=X'1000
426 1000        ;
```

```
 429 1000                .LIST   LER
 430 1000        ;
 431 1000        ;                  ... E X E C U T I V E   C P C ...
 432 1000        ;
 433 1000        ;                  ... RESTART INITIALIZATION ROUTINE ...
 434 1000        ERSI:
 435 1000 1860 A         BOC     CCSF,ESTK       ; TEST FOR STACKFULL LINE = 1
 436 1001 8CE7 A         LD      AC3,ARTC
 437 1002 4C00 A         LI      AC0,C0
 438 1003 0643 A         ROUT    FC43            ; ASSURE RTC STOPPED
 439 1004 0641 A         ROUT    FC41            ; ASSURE RTC INTERRUPT PULSE RESET
 440 1005        ;
 441 1005 0980 A         PFLG    INEN            ; DISABLE INTERRUPTS
 442 1006        ;
 443 1006        ;                  ... INITIALIZE CCU SERVICING ROUTINE ...
 444 1006 2C22 A         JSR     @AECCU
 445 1007        ;
 446 1007        ;                  ... INITIAL RAM ADDRESS TEST ...
 447 1007 0714 A         CLRST   D4              ; CLEAR MEMORY ADDRESS TEST STATUS FLAG
 448 1008 2C23 A         JSR     @AEMAD
 449 1009        ;
 450 1009 0715 A         CLRST   D5
 451 100A 0716 A         CLRST   D6
 452 100B 0717 A         CLRST   D7
 453 100C        ;
 454 100C 80F5 A         LD      AC0,H0200       ; RTS D0 INSTRUCTION
 455 100D B0A9 A         ST      AC0,@AERAM      ; STORE IN FIRST LOCATION OF FREE RAM
 456 100F                                        ;    (ENTRY POINT VIA COTF)
 457 100E        ;
 458 100E        ;                  ... RESET CONFLICT MONITOR ...
 459 100E 8CE2 A         LD      AC3,ACMU
 460 100F 4C00 A         LI      AC0,C0
 461 1010 0641 A         ROUT    FC41
 462 1011        ;
 463 1011        ;                  ... INITIALIZE CPU STACK ...
 464 1011 4EF0 A         LI      AC2,CM16
 465 1012 4700 A         PULL    AC3             ; PULL 16 WORDS FROM STACK
 466 1013 4A01 A         AISZ    AC2,C1
 467 1014 21FD A         JMP     .-2
 468 1015        ;
 469 1015        ;                  ... INITIALIZE STACK FOR BACKGROUND ROUTINES ...
 470 1015 4FFF A         LI      AC3,CM1
 471 1016 4300 A         PUSH    AC3
 472 1017 4300 A         PUSH    AC3             ; PUSH TWO PROTECTION WORDS OF ALL ONES
 473 1018        ;
 474 1018 889A A         LD      AC2,AEBUF
 475 1019 A200 A         ST      AC0,D0(AC2)     ; ZERO RTC COMPUTE FLAG
 476 101A        ;
 477 101A        ;                                 ZERO DATA BASE FROM VCSDB TO DEND
 478 101A 4C00 A         LI      AC0,C0
 479 101B 8880 A         LD      AC2,AVCSDB
 480 101C A200 A EZDB:   ST      AC0,(AC2)
```

```
 481 101D 4A01 A          AISZ    AC2,C1
 482 101E 2100 A          JMP     .+1
 483 101F E8D6 A          SKG     AC2,ADEND
 484 1020 21FB A          JMP     EZDB
 485 1021          ;
 486 1021          ;                                  COPY TIMING PLAN TABLES FROM ROM TO READ/
 487 1021          ;                                  WRITE DATA BASE
 488 1021 8898 A          LD      AC2,ATPTAB
 489 1022 8C88 A          LD      AC3,ATPM1
 490 1023 8200 A ETCPY:   LD      AC0,(AC2)
 491 1024 A300 A          ST      AC0,(AC3)
 492 1025 4A01 A          AISZ    AC2,C1
 493 1026 4C01 A          AISZ    AC3,C1
 494 1027 E899 A          SKG     AC2,ATPE
 495 1028 21FA A          JMP     ETCPY
 496 1029          ;
 497 1029 8898 A          LD      AC2,AETCY          ; INITIALIZE TIMING PLAN CYCLE TIMER
 498 102A 8115 A          LD      AC0,HOFFF          ;    MINIMUM TO A LARGE VALUE
 499 102B A202 A          ST      AC0,D2(AC2)        ;
 500 102C          ;
 501 102C          ;                                     ... PROGRAMMABLE PANEL ROUTINE ...
 502 102C 2C3F A          JSR     @AEPAN
 503 102D          ;
 504 102D          ;                                     ... READ DISCRETE INPUT WORDS, ETC. ...
 505 102D 2C3C A          JSR     @ABRTC
 506 102E          ;
 507 102E          ;                                  DETERMINE INITIAL DIAL SETTING AND COPY
 508 102E          ;                                  APPROPRIATE MASTER TIMING PLAN INTO CURRENT
 509 102E          ;                                  AND NEXT TIMING PLANS
 510 102E 2C38 A          JSR     @ATDIAL
 511 102F          ;
 512 102F          ;                                  SET INTERVAL COUNTER TO TH INTERVAL
 513 102F 9892 A          LD      AC2,@ATHI
 514 1030 B884 A          ST      AC2,@ATIN
 515 1031          ;
 516 1031          ;                                  SET CURRENT INTERVAL TIMER TO LENGTH OF
 517 1031          ;                                  CURRENT TH INTERVAL
 518 1031 C88F A          ADD     AC2,ATCTP
 519 1032 8600 A          LD      AC1,(AC2)
 520 1033 B485 A          ST      AC1,@ATINT
 521 1034          ;
 522 1034          ;                                  COPY APPROPRIATE COMMAND INDEX WORD INTO
 523 1034          ;                                  BUFFER(TCIWC)
 524 1034 9892 A          LD      AC2,@ATHI
 525 1035 C897 A          ADD     AC2,ATCIW
 526 1036 8600 A          LD      AC1,(AC2)
 527 1037 B482 A          ST      AC1,@ATCIWC
 528 1038          ;
 529 1038          ;                                  FORMAT OUTPUT WORD
 530 1038 2C3B A          JSR     @AXSDC
 531 1039          ;
 532 1039          ;
```

```
  533 1039          ;
  534 1039 1DFF A EHLT:   BOC     CCPH,EHLT       ; PSEUDO HALT LOOP
  535 103A          ;
  536 103A          ;
  537 103A 4C01 A         LI      AC0,C1
  538 103B 8CE7 A         LD      AC3,ARTC
  539 103C 0642 A         ROUT    FC42            ; START RTC
  540 103D          ;
  541 103D          ;                   ••• INITIATE BACKGROUND PROGRAMS •••
  542 103D 8C24 A         LD      AC3,AEBKD
  543 103E 4300 A         PUSH    AC3
  544 103F          ;
  545 103F 0100 A         RTI     D0              ; RETURN AND ENABLE INTERRUPTS •••
  546 1040          ;
  547 1040          ;                   ••• LOCAL DATA •••
  548 1040          ;
  549 1040 0FFF A HOFFF:  .WORD   X'0FFF
  550 1041          ;
```

```
 553 1041                .LIST   LER
 554 1041          ;
 555 1041          ;                     ... GENERAL INTERRUPT SERVICING ROUTINE ...
 556 1041          EGIS:
 557 1041 181F A           BOC     CCSF,ESTK       ; TEST FOR STACK FULL LINE = 1
 558 1042          ;
 559 1042 B8AB A           ST      AC2,@AESV2      ; SAVE ACCUMULATORS
 560 1043 88AB A           LD      AC2,AESV2
 561 1044 A2FE A           ST      AC0,DM2(AC2)
 562 1045 A6FF A           ST      AC1,DM1(AC2)
 563 1046 AE01 A           ST      AC3,D1(AC2)
 564 1047          ;
 565 1047 4400 A           PULL    AC0             ; SAVE RALU FLAGS
 566 1048 0080 A           PUSHF
 567 1049 5400 A           XCHRS   AC0
 568 104A B0AC A           ST      AC0,@AESVF
 569 104B          ;
 570 104B 4D04 A           LI      AC1,C4          ; SAVE CPU STACK
 571 104C 88AC A           LD      AC2,AESVF       ; STACK FOLLOWS RALU FLAG WORD
 572 104D 4700 A EGIS1:    PULL    AC3             ; PULL STACK FROM TOP TO BOTTOM
 573 104E AE01 A           ST      AC3,D1(AC2)
 574 104F 4700 A           PULL    AC3
 575 1050 AE02 A           ST      AC3,D2(AC2)
 576 1051 4700 A           PULL    AC3
 577 1052 AE03 A           ST      AC3,D3(AC2)
 578 1053 4700 A           PULL    AC3
 579 1054 AE04 A           ST      AC3,D4(AC2)
 580 1055 4A04 A           AISZ    AC2,D4          ; INCREMENT SAVE AREA ADDRESS BY 4
 581 1056 49FF A           AISZ    AC1,CM1         ; DECREMENT PASS COUNTER, SKIP IF DONE
 582 1057 21F5 A           JMP     EGIS1
 583 1058          ;
 584 1058          ;
 585 1058 4C01 A           LI      AC0,C1          ; SAVE SELECT FLAG STATE
 586 1059 58EF A           ROR     AC0,D17
 587 105A 1303 A           BOC     CCB0,EGIS2      ; BRANCH IF SELECT FLAG SET
 588 105B 4C00 A           LI      AC0,C0
 589 105C B0AD A           ST      AC0,@AESVS      ; SELECT FLAG = 0
 590 105D 212D A           JMP     EGIS3
 591 105E 4C01 A EGIS2:    LI      AC0,C1
 592 105F B0AD A           ST      AC0,@AESVS      ; SELECT FLAG = 1
 593 1060 212A A           JMP     EGIS3
 594 1061          ;
 595 1061          ;
 596 1061          ;
 597 1061          ;                     ... CLEAR STACK FULL CONDITION ...
 598 1061          ESTK:
 599 1061 5400 A           XCHRS   AC0
 600 1062 B0B3 A           ST      AC0,@AISTK1     ; SAVE STACK 1
 601 1063 4400 A           PULL    AC0             ; RESTORE AC0
 602 1064 5400 A           XCHRS   AC0
 603 1065 B0B4 A           ST      AC0,@AISTK2     ; SAVE STACK 2
 604 1066 4400 A           PULL    AC0             ; RESTORE AC0
```

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 605 1067 5400 A          XCHRS   AC0
 606 1068 B0B5 A          ST      AC0,@AISTK3      ; SAVE STACK 3
 607 1069 4400 A          PULL    AC0              ; RESTORE AC0
 608 106A 5400 A          XCHRS   AC0
 609 106B B0B6 A          ST      AC0,@AISTK4      ; SAVE STACK 4
 610 106C 4400 A          PULL    AC0              ; RESTORE AC0
 611 106D          ;
 612 106D B8B2 A          ST      AC2,@AISV2       ; SAVE ACCUMULATORS
 613 106E 88B2 A          LD      AC2,AISV2
 614 106F A2FE A          ST      AC0,DM2(AC2)
 615 1070 A6FF A          ST      AC1,DM1(AC2)
 616 1071 AF01 A          ST      AC3,D1(AC2)
 617 1072          ;
 618 1072 8CE7 A          LD      AC3,ARTC
 619 1073 4C00 A          LI      AC0,C0
 620 1074 0643 A          ROUT    FC43             ; STOP RTC
 621 1075 0980 A          PFLG    INEN             ; DISABLE INTERRUPTS
 622 1076          ;
 623 1076 88B6 A          LD      AC2,AISTK4       ; SAVE STACK 5 - 16
 624 1077 4D03 A          LI      AC1,C3
 625 1078 4700 A ESTK1:   PULL    AC3
 626 1079 AF01 A          ST      AC3,D1(AC2)
 627 107A 4700 A          PULL    AC3
 628 107B AE02 A          ST      AC3,D2(AC2)
 629 107C 4700 A          PULL    AC3
 630 107D AE03 A          ST      AC3,D3(AC2)
 631 107E 4700 A          PULL    AC3
 632 107F AE04 A          ST      AC3,D4(AC2)
 633 1080 4A04 A          AISZ    AC2,C4
 634 1081 49FF A          AISZ    AC1,CM1
 635 1082 21F5 A          JMP     ESTK1
 636 1083          ;
 637 1083 88B2 A          LD      AC2,AISV2        ; RESTORE ACCUMULATORS
 638 1084 82FE A          LD      AC0,DM2(AC2)
 639 1085 86FF A          LD      AC1,DM1(AC2)
 640 1086 8E01 A          LD      AC3,D1(AC2)
 641 1087 98B2 A          LD      AC2,@AISV2
 642 1088          ;
 643 1088 2C2F A          JSR     @AEADC           ; AUTODISCONNECT ROUTINE, NO RETURN
 644 1089          ;
 645 1089 2100 A          JMP     .+1              ; THIS INST SHOULD NEVER BE REACHED
 646 108A 21FE A          JMP     .-1
 647 108B          ;
 648 108B          ;                  ... DETERMINE SOURCE OF INTERRUPT ...
 649 108B          EGIS3:
 650 108B          ;
 651 108B          ;                  ... RTC IS THE ONLY INTERRUPT PRESENTLY ASSIGNED ...
 652 108B          ;
 653 108B          ;                  ... REAL TIME CLOCK INTERRUPT SERVICING ROUTINE ...
 654 108B 889A A ERTC:    LD      AC2,AEBUF        ; CHECK FOR COMPLETION OF PREVIOUS
 655 108C 8200 A          LD      AC0,D0(AC2)      ;    RTC COMPUTE SEQUENCE
 656 108D 110A A          BOC     CCEZ,ERTC1       ; BRANCH IF NO ERROR
```

```
 657 108E          ;
 658 108E 889F A          LD      AC2,AEERR
 659 108F A202 A          ST      AC0,D2(AC2)      ; STORE RTC COMPUTE FLAG, EERRO
 660 1090 8201 A          LD      AC0,D1(AC2)
 661 1091 4801 A          AISZ    AC0,C1           ; INCREMENT ERROR COUNTER
 662 1092 2100 A          JMP     .+1
 663 1093 A201 A          ST      AC0,D1(AC2)
 664 1094 8200 A          LD      AC0,D0(AC2)
 665 1095 0720 A          SETBIT  D0               ; SET ERROR FLAG BIT 0
 666 1096 A200 A          ST      AC0,D0(AC2)
 667 1097 2425 A          JMP     @AECER           ; RTC ERROR RESPONSE ROUTINE
 668 1098          ;
 669 1098 4C01 A ERTC1:   LI      AC0,C1           ; SET RTC COMPUTE FLAG
 670 1099 A200 A          ST      AC0,D0(AC2)
 671 109A          ;                  ... INITIALIZE STACK FOR RTC SEQUENCE ...
 672 109A          ;
 673 109A 4FFF A          LI      AC3,CM1
 674 109B 4300 A          PUSH    AC3
 675 109C 4300 A          PUSH    AC3              ; PUSH TWO PROTECTION WORDS OF ALL ONES
 676 109D          ;
 677 109D 2C26 A          JSR     @AESCH           ; CALL SCHEDULING ROUTINE
 678 109E          ;
 679 109E 4700 A          PULL    AC3              ; PULL TWO PROTECTION WORDS FROM STACK
 680 109F 4700 A          PULL    AC3
 681 10A0          ;
 682 10A0          ;                  ... ENABLE OTHER INTERRUPTS ...
 683 10A0          ;
 684 10A0          ;                  ... NO OTHER INTERRUPTS PRESENTLY ASSIGNED ...
 685 10A0 889A A          LD      AC2,AEBUF        ; RESET RTC COMPUTE FLAG
 686 10A1 4C00 A          LI      AC0,C0
 687 10A2 A200 A          ST      AC0,D0(AC2)
 688 10A3          ;
 689 10A3          ;                  ... RESTORE COMPUTATIONAL ENVIRONMENT ...
 690 10A3 90AD A          LD      AC0,@AESVS       ; RESTORE SELECT FLAG
 691 10A4 1102 A          BOC     CCEZ,EGIS4
 692 10A5 0A00 A          SFLG    SELF
 693 10A6 2101 A          JMP     .+2
 694 10A7 0A80 A EGIS4:   PFLG    SELF
 695 10A8          ;
 696 10A8          ;
 697 10A8 4D04 A          LI      AC1,C4           ; RESTORE CPU STACK
 698 10A9 89AD A          LD      AC2,AESVS        ; STACK PRECEDES SELECT FLAG WORD
 699 10AA 4AFC A EGIS5:   AISZ    AC2,DM4          ; DECREMENT SAVE AREA ADDRESS BY 4
 700 10AB 8E03 A          LD      AC3,D3(AC2)      ; PUSH STACK FROM BOTTOM TO TOP
 701 10AC 4300 A          PUSH    AC3
 702 10AD 8E02 A          LD      AC3,D2(AC2)
 703 10AE 4300 A          PUSH    AC3
 704 10AF 8E01 A          LD      AC3,D1(AC2)
 705 10B0 4300 A          PUSH    AC3
 706 10B1 8E00 A          LD      AC3,D0(AC2)
 707 10B2 4300 A          PUSH    AC3
 708 10B3 49FF A          AISZ    AC1,CM1          ; DECREMENT PASS COUNTER, SKIP IF DONE
```

```
  709 10B4 21F5 A          JMP     EGIS5
  710 10B5         ;
  711 10B5 90AC A          LD      AC0,@AESVF      ; RESTORE RALU FLAGS
  712 10B6 5400 A          XCHRS   AC0
  713 10B7 0280 A          PULLF
  714 10B8 4000 A          PUSH    AC0
  715 10B9         ;
  716 10B9         ;                                RESTORE ACCUMULATORS
  717 10B9 98AB A          LD      AC2,AESV2
  718 10BA 82FE A          LD      AC0,DM2(AC2)
  719 10BB 86FF A          LD      AC1,DM1(AC2)
  720 10BC 8E01 A          LD      AC3,D1(AC2)
  721 10BD 98AB A          LD      AC2,@AESV2
  722 10BE         ;
  723 10BF 0100 A          RTI                     ; RETURN AND ENABLE INTERRUPTS
  724 10BF         ;
  725 10BF         ;                  ... RTC ERROR, PREVIOUS SEQUENCE INCOMPLETE ...
  726 10CF       ECER:
  727 10BF 2C2F A          JSR     @AEADC          ; AUTODISCONNECT ROUTINE, NO RETURN
  728 10C0         ;
  729 10C0 2100 A          JMP     .+1             ; THIS INST SHOULD NEVER BE REACHED
  730 10C1 21FE A          JMP     .-1
```

```
  733 10C2                .LIST   LER
  734 10C2          ;
  735 10C2          ;                     ... COMPUTER CONTROL UNIT INITIALIZATION ...
  736 10C2         ECCU:
  737 10C2          ;
  738 10C2          ;                          ... TEST FOR CCU IN SYSTEM ...
  739 10C2 1C01 A           BOC     CCCU,.+2          ; BRANCH IF CCU IS IN SYSTEM
  740 10C3 2115 A           JMP     ECCUR             ; JUMP IF CCU NOT IN SYSTEM
  741 10C4          ;
  742 10C4 9115 A           LD      AC0,@ACCUI        ; CHECK FIRST INST IN CCU ROUTINE
  743 10C5 F115 A           SKNE    AC0,ECCUI         ; SKIP IF CCU NOT IN SYSTEM
  744 10C6 2101 A           JMP     .+2
  745 10C7 2111 A           JMP     ECCUR             ; JUMP TO RETURN
  746 10C8          ;
  747 10C8          ;                          ... INITIALIZE CCU RAM ...
  748 10C8 4C00 A           LI      AC0,C0
  749 10C9 4D30 A           LI      AC1,C48           ; LENGTH OF CCU RAM = 48
  750 10CA 8913 A           LD      AC2,ACWAP         ; INITIALIZE ADDRESS POINTER
  751 10CB          ;
  752 10CB A2F4 A ECCU1:    ST      AC0,DM12(AC2)     ; CLEAR RAM
  753 10CC 4A01 A           AISZ    AC2,C1            ; INCREMENT ADDRESS POINTER
  754 10CD 49FF A           AISZ    AC1,CM1           ; DECREMENT COUNTER, SKIP IF DONE
  755 10CE 21FC A           JMP     ECCU1             ; CONTINUE LOOP
  756 10CF          ;
  757 10CF 890E A           LD      AC2,ACWAP         ; INITIALIZE ADDRESS POINTER
  758 10D0 7AF9 A           ISZ     DM7(AC2)          ; SET STATE WORD = +1
  759 10D1 7E0C A           DSZ     D12(AC2)          ; SET BREAKPOINT ADDRESS 0 = -1
  760 10D2 7E0E A           DSZ     D14(AC2)          ; SET BREAKPOINT ADDRESS 1 = -1
  761 10D3          ;
  762 10D3 810B A           LD      AC0,AECCUR        ; RETURN ADDRESS FROM CCU ROUTINE
  763 10D4 A203 A           ST      AC0,D3(AC2)       ; STORE IN TEMPORARY PC LOC IN CCU RAM
  764 10D5          ;
  765 10D5 8107 A           LD      AC0,ACRAM         ; BASE ADDRESS OF CCU RAM WORK AREA
  766 10D6 A2FA A           ST      AC0,CM6(AC2)      ; INITIALIZE PUSH/PULL POINTER
  767 10D7          ;
  768 10D7 4C00 A           LI      AC0,C0            ; AC0 = 0, INITIAL DISPLAY
  769 10D8 2503 A           JMP     @ACDISP           ; TO CCU ROUTINE, RETURN IS TO ECCUR
  770 10D9          ;
  771 10D9 0200 A ECCUR:    RTS     D0                ; RETURN FROM ECCU
  772 10DA          ;
  773 10DA          ;                          ... LOCAL DATA ...
  774 10DA EF00 A ACCUI:    .WORD   X'EF00            ; LOC OF FIRST INST IN CCU ROUTINE
  775 10DB 86F7 A ECCUI:    .WORD   X'86F7            ; FIRST INST IN CCU ROUTINE
  776 10DC EF84 A ACDISP:   .WORD   X'EF84            ; CCU ROM + X'84
  777 10DD ECD0 A ACRAM:    .WORD   X'ECD0            ; FIRST LOC IN CCU RAM WORK AREA
  778 10DE ECDC A ACWAP:    .WORD   X'ECDC            ; CCU RAM WORK AREA + X'C
  779 10DF 10D9 A AECCUR:   .WORD   ECCUR             ; RETURN ADDRESS FROM CCU INITIALIZATION
```

```
 782 10E0                .LIST   LER
 783 10E0          ;
 784 10E0          ;                  ... INITIALIZATION RAM ADDRESS TEST ...
 785 10E0          EMAD:
 786 10E0          ;
 787 10E0          ;                  ... TEST 4K STATIC RAM ...
 788 10E0          ;                      (CAN ONLY TEST ADDRESS -NOT- USED BY DATA BASE)
 789 10E0 80D6 A           LD      AC0,ADEND       ; START ADDRESS (PAST DATA BASE)
 790 10E1 B0D4 A           ST      AC0,@ASSAD
 791 10E2 80F2 A           LD      AC0,H3FFF       ; END ADDRESS
 792 10E3 B0D5 A           ST      AC0,@ASEAD
 793 10E4          ;
 794 10E4 2C5A A           JSR     @ASMAD
 795 10E5 2109 A           JMP     EMADE           ; ERROR RETURN, (AC2) = CONTENTS
 796 10E6                                          ;                 (AC3) = ADDRESS
 797 10E6 2100 A           JMP     .+1             ; NO ERROR RETURN
 798 10E7          ;
 799 10E7          ;                  ... TEST CCU RAM ON IMP/16C CARD ...
 800 10E7          ;                      ( CAN ONLY TEST ADDRESSES -NOT- USED BY CCU)
 801 10E7 80F3 A           LD      AC0,HEC00       ; START ADDRESS
 802 10E8 B0D4 A           ST      AC0,@ASSAD
 803 10E9 80F4 A           LD      AC0,HECCF       ; END ADDRESS
 804 10EA B0D5 A           ST      AC0,@ASEAD
 805 10EB          ;
 806 10EB 2C5A A           JSR     @ASMAD
 807 10EC 2102 A           JMP     EMADE           ; ERROR RETURN, (AC2) = CONTENTS
 808 10ED                                          ;                 (AC3) = ADDRESS
 809 10ED 2100 A           JMP     .+1             ; NO ERROR RETURN
 810 10EE          ;
 811 10EE 2103 A           JMP     EMADR
 812 10EF          ;
 813 10EF 2C2F A EMADE:    JSR     @AEADC          ; AUTODISCONNECT ROUTINE, NO RETURN
 814 10F0          ;
 815 10F0 2100 A           JMP     .+1             ; THIS INST SHOULD NEVER BE REACHED
 816 10F1 21FE A           JMP     .-1
 817 10F2          ;
 818 10F2 0200 A EMADR:    RTS     D0              ; RETURN FROM EMAD
 819 10F3          ;
```

EXECUTIVE CPC - SCHEDULING ROUTINE FOR RTC SEQUENCE

```
 822 10F3                .LIST   LER
 823 10F3          ;
 824 10F3          ;                  ... RTC SCHEDULING ROUTINE ...
 825 10F3          ESCH:
 826 10F3 8CE7 A           LD      AC3,ARTC
 827 10F4 4C00 A           LI      AC0,C0          ; CLEAR AC0
 828 10F5 0641 A           ROUT    FC41            ; RESET RTC INTERRUPT PULSE
 829 10F6          ;
 830 10F6 0900 A           SFLG    INEN              ; ENABLE INTERRUPTS
 831 10F7          ;
 832 10F7 1E01 A           BOC     CCCF,.+2        ; BRANCH IF COTF JUMP CONDITION SET
 833 10F8 2101 A           JMP     .+2
 834 10F9 2C3D A           JSR     @ACOTF          ; CALL CATCH ON THE FLY ROUTINE
 835 10FA          ;
 836 10FA 2C39 A           JSR     @AXRTC
 837 10FB 2C3C A           JSR     @ABRTC
 838 10FC 2C27 A           JSR     @AEDIS
 839 10FD 2C28 A           JSR     @AECOM
 840 10FE 2C29 A           JSR     @AESYN
 841 10FF 2C2A A           JSR     @AEMIC
 842 1100 2C2B A           JSR     @AETIM
 843 1101 2C2E A           JSR     @AEDET
 844 1102 2C30 A           JSR     @ARMON
 845 1103 2C35 A           JSR     @ATPEX
 846 1104 2C3B A           JSR     @AXSDC
 847 1105 2C2D A           JSR     @AESDW
 848 1106 2C40 A           JSR     @AEPPM
 849 1107          ;
 850 1107 2105 A           JMP     ERTS
 851 1108          ;
 852 1108 8905 A           LD      AC2,EDLAY
 853 1109 5C76 A           SHL     AC0,D118
 854 110A 5C74 A           SHL     AC0,D116
 855 110B 4A01 A           AISZ    AC2,C1
 856 110C 21FC A           JMP     .-3
 857 110D          ;
 858 110D 0200 A ERTS:     RTS     D0
 859 110E          ;                                   VARIABLE DELAY
 860 110E FFCE A EDLAY:    .WORD   -50
 861 110F          ;
 862 110F          ;
```

```
 865 110F                .LIST   LER
 866 110F          ;
 867 110F          ;                    ••• AUTODISCONNECT ROUTINE •••
 868 110F          EADC:
 869 110F B8B7 A           ST      AC2,@AEDSV2     ; SAVE ACCUMULATORS
 870 1110 88B7 A           LD      AC2,AEDSV2
 871 1111 A2FE A           ST      AC0,DM2(AC2)
 872 1112 A6FF A           ST      AC1,DM1(AC2)
 873 1113 AE01 A           ST      AC3,D1(AC2)
 874 1114          ;
 875 1114 8CE7 A           LD      AC3,ARTC
 876 1115 4C00 A           LI      AC0,C0
 877 1116 0643 A           ROUT    FC43            ; STOP RTC
 878 1117 0641 A           ROUT    FC41            ; ASSURE RTC INTERRUPT PULSE RESET
 879 1118 0980 A           PFLG    INEN            ; DISABLE INTERRUPTS
 880 1119          ;
 881 1119 4400 A           PULL    AC0             ; SAVE RALU FLAGS
 882 111A 0080 A           PUSHF
 883 111B 5400 A           XCHRS   AC0
 884 111C B0B8 A           ST      AC0,@AEDSVF
 885 111D          ;
 886 111D 4D04 A           LI      AC1,C4          ; SAVE CPU STACK
 887 111E 88D8 A           LD      AC2,AEDSVF      ; STACK FOLLOWS RALU FLAG WORD
 888 111F 4700 A EADC1:    PULL    AC3             ; PULL STACK FROM TOP TO BOTTOM
 889 1120 AE01 A           ST      AC3,D1(AC2)
 890 1121 4700 A           PULL    AC3
 891 1122 AE02 A           ST      AC3,D2(AC2)
 892 1123 4700 A           PULL    AC3
 893 1124 AE03 A           ST      AC3,D3(AC2)
 894 1125 4700 A           PULL    AC3
 895 1126 AE04 A           ST      AC3,D4(AC2)
 896 1127 4A04 A           AISZ    AC2,D4          ; INCREMENT SAVE AREA ADDRESS BY 4
 897 1128 49FF A           AISZ    AC1,CM1         ; DECREMENT PASS COUNTER, SKIP IF DONE
 898 1129 21F5 A           JMP     EADC1
 899 112A          ;
 900 112A          ;
 901 112A 4C01 A           LI      AC0,C1          ; SAVE SELECT FLAG STATE
 902 112B 58EF A           ROR     AC0,D17
 903 112C 1303 A           BOC     CCB0,EADC2      ; BRANCH IF SELECT FLAG SET
 904 112D 4C00 A           LI      AC0,C0
 905 112E B0B9 A           ST      AC0,@AEDSVS     ; SELECT FLAG = 0
 906 112F 2102 A           JMP     EADC3
 907 1130 4C01 A EADC2:    LI      AC0,C1
 908 1131 B0B9 A           ST      AC0,@AEDSVS     ; SELECT FLAG = 1
 909 1132          ;
 910 1132          EADC3:
 911 1132          ;
 912 1132 2C2D A           JSR     @AESDW          ; CONSTRUCT STATUS DISPLAY WORD
 913 1133          ;
 914 1133 906B A           LD      AC0,@AXBUF      ; FETCH SDW
 915 1134 0751 A           SKBIT   D1              ; CHECK EXTERNAL DISCONNECT BIT
 916 1135 2101 A           JMP     .+2             ; JUMP IF NOT EXTERNAL
```

EXECUTIVE CPC - AUTODISCONNECT ROUTINE

```
  917 1136 2104 A          JMP     EADC4           ; JUMP IF EXTERNAL
  918 1137 0720 A          SETBIT  D0              ; SET DISCONNECT BIT
  919 1138 B06B A          ST      AC0,@AXBUF
  920 1139 8CE3 A          LD      AC3,ATCP        ; OUTPUT CONTROL PULSE FOR
  921 113A 0643 A          ROUT    FC43            ;    INTERNAL DISCONNECT TO TCP
  922 113B          ;
  923 113B 8CE4 A EADC4:   LD      AC3,ASDU        ; OUTPUT SDW TO SDU
  924 113C 906B A          LD      AC0,@AXBUF      ; FETCH SDW
  925 113D 0601 A          ROUT    FC1
  926 113E          ;
  927 113E          ;
  928 113E 3081 A          NOP                     ; TERMINAL WAIT LOOP, NO RETURN
  929 113F 3081 A          NOP
  930 1140 21FD A          JMP     .-2
  931 1141 0000 A          HALT                    ; THIS HALT SHOULD NEVER BE REACHED
  932 1142 0000 A          HALT
```

```
 935 1143                .LIST   LER
 936 1143        ;
 937 1143        ;                       ... TIME OUT FOR DEBUG ROUTINE ...
 938 1143        ;*****************************************************************************
 939 1143        ;
 940 1143        COTF:
 941 1143 B8AF A         ST      AC2,@ACSV2              ; SAVE ACCUMULATORS
 942 1144 88AF A         LD      AC2,ACSV2
 943 1145 A2FE A         ST      AC0,DM2(AC2)
 944 1146 A6FF A         ST      AC1,DM1(AC2)
 945 1147 AE01 A         ST      AC3,D1(AC2)
 946 1148        ;
 947 1148 4400 A         PULL    AC0             ; SAVE RALU FLAGS
 948 1149 0080 A         PUSHF
 949 114A 5400 A         XCHRS   AC0
 950 114B B0B0 A         ST      AC0,@ACSVF
 951 114C        ;
 952 114C 4D04 A         LI      AC1,C4          ; SAVE CPU STACK
 953 114D 88B0 A         LD      AC2,ACSVF       ; STACK FOLLOWS RALU FLAG WORD
 954 114E 4700 A COTF1:  PULL    AC3             ; PULL STACK FROM TOP TO BOTTOM
 955 114F AE01 A         ST      AC3,D1(AC2)
 956 1150 4700 A         PULL    AC3
 957 1151 AE02 A         ST      AC3,D2(AC2)
 958 1152 4700 A         PULL    AC3
 959 1153 AE03 A         ST      AC3,D3(AC2)
 960 1154 4700 A         PULL    AC3
 961 1155 AE04 A         ST      AC3,D4(AC2)
 962 1156 4A04 A         AISZ    AC2,D4          ; INCREMENT SAVE AREA ADDRESS BY 4
 963 1157 49FF A         AISZ    AC1,CM1         ; DECREMENT PASS COUNTER, SKIP IF DONE
 964 1158 21F5 A         JMP     COTF1
 965 1159        ;
 966 1159        ;
 967 1159 4C01 A         LI      AC0,C1          ; SAVE SELECT FLAG STATE
 968 115A 58EF A         ROR     AC0,D17
 969 115B 1303 A         BOC     CC30,COTF2      ; BRANCH IF SELECT FLAG SET
 970 115C 4C00 A         LI      AC0,C0
 971 115D B0B1 A         ST      AC0,@ACSVS      ; SELECT FLAG = 0
 972 115E 2102 A         JMP     COTF3
 973 115F 4C01 A COTF2:  LI      AC0,C1
 974 1160 B0B1 A         ST      AC0,@ACSVS      ; SELECT FLAG = 1
 975 1161        ;
 976 1161        ;                                 STOP THE CLOCK
 977 1161        COTF3:
 978 1161 8CE7 A         LD      AC3,ARTC
 979 1162 4C00 A         LI      AC0,C0
 980 1163 0643 A         ROUT    FC43                    ; STOP RTC
 981 1164 0641 A         ROUT    FC41            ; RESET RTC INTERRUPT PULSE
 982 1165        ;
 983 1165        ;-----------------------------------------------------------------------------
 984 1165 3081 A         NOP                             ; INSERT DEBUG HALT OR SNAP HERE
 985 1166 3081 A         NOP
 986 1167 2CA9 A         JSR     @AERAM          ; FIRST LOCATION IN FREE RAM
```

```
 987 1168 3081 A          NOP
 988 1169 3081 A          NOP
 989 116A 3081 A          NOP
 990 116B          ;-----------------------------------------------------------------------
 991 116B          ;
 992 116B          ;                                        START THE CLOCK
 993 116B 8CE7 A          LD       AC3,ARTC
 994 116C 4C00 A          LI       AC0,C0
 995 116D 0642 A          ROUT     FC42                    ; START RTC
 996 116E          ;
 997 116E          ;                   ... RESTORE COMPUTATIONAL ENVIRONMENT ...
 998 116E          ;
 999 116E 90B1 A          LD       AC0,@ACSVS      ; RESTORE SELECT FLAG
1000 116F 1102 A          BOC      CCEZ,COTF4
1001 1170 0A00 A          SFLG     SELF
1002 1171 2101 A          JMP      .+2
1003 1172 0A80 A COTF4:   PFLG     SELF
1004 1173          ;
1005 1173          ;
1006 1173 4D04 A          LI       AC1,C4          ; RESTORE CPU STACK
1007 1174 88B1 A          LD       AC2,ACSVS       ; STACK PRECEDES SELECT FLAG WORD
1008 1175 4AFC A COTF5:   AISZ     AC2,DM4         ; DECREMENT SAVE AREA ADDRESS BY 4
1009 1176 8E03 A          LD       AC3,D3(AC2)     ; PUSH STACK FROM BOTTOM TO TOP
1010 1177 4300 A          PUSH     AC3
1011 1178 8E02 A          LD       AC3,D2(AC2)
1012 1179 4300 A          PUSH     AC3
1013 117A 8E01 A          LD       AC3,D1(AC2)
1014 117B 4300 A          PUSH     AC3
1015 117C 8E00 A          LD       AC3,D0(AC2)
1016 117D 4300 A          PUSH     AC3
1017 117E 49FF A          AISZ     AC1,CM1         ; DECREMENT PASS COUNTER, SKIP IF DONE
1018 117F 21F5 A          JMP      COTF5
1019 1180          ;
1020 1180 90D0 A          LD       AC0,@ACSVF      ; RESTORE RALU FLAGS
1021 1181 5400 A          XCHRS    AC0
1022 1182 0280 A          PULLF
1023 1183 4000 A          PUSH     AC0
1024 1184          ;
1025 1184          ;                                        RESTORE ACCUMULATORS
1026 1184 88AF A          LD       AC2,ACSV2
1027 1185 82FE A          LD       AC0,DM2(AC2)
1028 1186 86FF A          LD       AC1,DM1(AC2)
1029 1187 8E01 A          LD       AC3,D1(AC2)
1030 1188 98AF A          LD       AC2,@ACSV2
1031 1189          ;
1032 1189 0200 A          RTS      D0              ; RETURN FROM COTF
```

```
1033 118A                .PAGE
1034 118A                .ASECT
1035 118A 1200 A         .=X'1200
1036 1200        ;
```

```
1039 1200                .LIST   LES
1040 1200          ;
1041 1200          ;                    ... MONITOR FOR DISCONNECT ...
1042 1200          EDIS:
1043 1200          ;
1044 1200          ;                    ... TEST PROCESSOR STATUS FLAGS ...
1045 1200 0744 A           SKSTF   D4              ; SKIP IF RAM ADDRESS TEST ERROR
1046 1201 2101 A           JMP     .+2
1047 1202 210C A           JMP     EDISH
1048 1203          ;
1049 1203          ;                    ... RESERVE TESTS FOR ADDITIONAL STATUS FLAGS ...
1050 1203 0745 A           SKSTF   D5
1051 1204 2101 A           JMP     .+2
1052 1205 2109 A           JMP     EDISH
1053 1206          ;
1054 1206 0746 A           SKSTF   D6
1055 1207 2101 A           JMP     .+2
1056 1208 2106 A           JMP     EDISH
1057 1209          ;
1058 1209 0747 A           SKSTF   D7
1059 120A 2101 A           JMP     .+2
1060 120B 2103 A           JMP     EDISH
1061 120C          ;
1062 120C 9069 A           LD      AC0,@ABDIN      ; DISCRETE INPUT WORD
1063 120D 075F A           SKBIT   D15             ; SKIP IF DISCONNECT BIT IS SET
1064 120E 0200 A           RTS     D0
1065 120F          ;
1066 120F 2C2F A EDISH:    JSR     @AEADC          ; AUTODISCONNECT ROUTINE, NO RETURN
1067 1210          ;
1068 1210 2100 A           JMP     .+1             ; THIS INST SHOULD NEVER BE REACHED
1069 1211 21FE A           JMP     .-1
1070 1212          ;
```

```
1073 1212                .LIST   LES
1074 1212          ;
1075 1212          ;                    ... MONITOR COMMAND FEEDBACK DATA FROM LDU ...
1076 1212          ECOM:
1077 1212 4C00 A           LI      AC0,C0
1078 1213 B0A0 A           ST      AC0,@AECMF      ; CLEAR CURRENT RTC INTERVAL ERROR FLAG
1079 1214          ;
1080 1214          ;                    ... COMMAND FEEDBACK TEST FOR MAIN STREET ...
1081 1214 886B A           LD      AC2,AXBUF
1082 1215 8201 A           LD      AC0,D1(AC2)     ; XOCW1 OUTPUT COMMAND
1083 1216 60F2 A           AND     AC0,H3FFF       ; MASK OFF DON'T CARE BITS 15,14
1084 1217 8868 A           LD      AC2,ABBUF
1085 1218 8601 A           LD      AC1,D1(AC2)     ; BCR1 FEEDBACK COMMAND
1086 1219 60F2 A           AND     AC0,H3FFF       ; MASK OFF DON'T CARE BITS 15,14
1087 121A 3482 A           RXOR    AC1,AC0         ; COMPARE, AC1 UNALTERED
1088 121B 110B A           BOC     CCEZ,ECOM1      ; BRANCH IF IDENTICAL (AC0=0)
1089 121C          ;
1090 121C          ;                    ... MAIN STREET COMMAND FEEDBACK ERROR ...
1091 121C 889F A           LD      AC2,AEERR
1092 121D A604 A           ST      AC1,D4(AC2)     ; STORE BCR1 IN ERROR BUFFER, EERR1
1093 121E 8203 A           LD      AC0,D3(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
1094 121F 4801 A           AISZ    AC0,C1
1095 1220 2100 A           JMP     .+1
1096 1221 A203 A           ST      AC0,D3(AC2)
1097 1222 8200 A           LD      AC0,D0(AC2)
1098 1223 0721 A           SETBIT  D1              ; SET ERROR FLAG BIT 1
1099 1224 A200 A           ST      AC0,D0(AC2)
1100 1225 4C01 A           LI      AC0,C1
1101 1226 B0A0 A           ST      AC0,@AECMF      ; SET CURRENT RTC INTERVAL ERROR FLAG
1102 1227          ;
1103 1227          ;                    ... COMMAND FEEDBACK TEST FOR CROSS STREET ...
1104 1227          ECOM1:
1105 1227 886B A           LD      AC2,AXBUF
1106 1228 8202 A           LD      AC0,D2(AC2)     ; XOCW2 OUTPUT COMMAND
1107 1229 60F2 A           AND     AC0,H3FFF       ; MASK OFF DON'T CARE BITS 15,14
1108 122A 8868 A           LD      AC2,ABBUF
1109 122B 8602 A           LD      AC1,D2(AC2)     ; BCR2 FEEDBACK COMMAND
1110 122C 60F2 A           AND     AC0,H3FFF       ; MASK OFF DON'T CARE BITS 15,14
1111 122D 3482 A           RXOR    AC1,AC0         ; COMPARE, AC1 UNALTERED
1112 122E 110C A           BOC     CCEZ,ECOM2      ; BRANCH IF IDENTICAL (AC0=0)
1113 122F          ;
1114 122F          ;                    ... CROSS STREET COMMAND FEEDBACK ERROR ...
1115 122F 889F A           LD      AC2,AEERR
1116 1230 A606 A           ST      AC1,D6(AC2)     ; STORE BCR2 IN ERROR BUFFER, EERR2
1117 1231 8205 A           LD      AC0,D5(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
1118 1232 4801 A           AISZ    AC0,C1
1119 1233 2100 A           JMP     .+1
1120 1234 A205 A           ST      AC0,D5(AC2)
1121 1235 8200 A           LD      AC0,D0(AC2)
1122 1236 0722 A           SETBIT  D2              ; SET ERROR FLAG BIT 2
1123 1237 A200 A           ST      AC0,D0(AC2)
1124 1238 4C02 A           LI      AC0,C2
```

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1125 1239 B0A0 A        ST      AC0,@AECMF      ; SET CURRENT RTC INTERVAL ERROR FLAG
1126 123A 2103 A        JMP     ECOMR
1127 123B       ;
1128 123B 90A0 A ECOM2: LD      AC0,@AECMF      ; TEST CURRENT RTC INTERVAL ERROR FLAG
1129 123C 1501 A        BOC     CCMZ,ECOMR      ; BRANCH IF ERROR
1130 123D       ;
1131 123D 2C3A A        JSR     @AXWDT          ; RESET WATCHDOG TIMER IF NO ERROR
1132 123E       ;
1133 123E 0200 A ECOMR: RTS     D0              ; RETURN FROM ECOM
1134 123F       ;
```

```
1137 123F                .LIST   LES
1138 123F          ;
1139 123F          ;                  ... LOOP MASTER SYNCHRONIZATION ROUTINE ...
1140 123F          ESYN:
1141 123F 90A2 A           LD      AC0,@AER123     ; FETCH RESET SELECT DATUM
1142 1240 1125 A           BOC     CCEZ,ESYN4A     ; BRANCH IF NO RESET IS HIGH (PULSE)
1143 1241 4D02 A           LI      AC1,C2
1144 1242 3482 A           RXOR    AC1,AC0
1145 1243 1113 A           BOC     CCEZ,ESYN1      ; BRANCH IF ONLY RESET 1 IS HIGH
1146 1244 90A2 A           LD      AC0,@AER123     ; RESTORE RESET SELECT DATUM
1147 1245 4D04 A           LI      AC1,C4
1148 1246 3482 A           RXOR    AC1,AC0
1149 1247 1114 A           BOC     CCEZ,ESYN2      ; BRANCH IF ONLY RESET 2 IS HIGH
1150 1248 90A2 A           LD      AC0,@AER123     ; RESTORE RESET SELECT DATUM
1151 1249 4D08 A           LI      AC1,C8
1152 124A 3482 A           RXOR    AC1,AC0
1153 124B 1115 A           BOC     CCEZ,ESYN3      ; BRANCH IF ONLY RESET 3 IS HIGH
1154 124C 889F A           LD      AC2,AEERR       ; ERROR, MORE THAN ONE RESET IS HIGH
1155 124D 90A2 A           LD      AC0,@AER123     ; RESTORE RESET SELECT DATUM
1156 124E A208 A           ST      AC0,D8(AC2)     ; STORE IN ERROR BUFFER, EERR3
1157 124F 8207 A           LD      AC0,D7(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
1158 1250 4801 A           AISZ    AC0,C1
1159 1251 2100 A           JMP     .+1
1160 1252 A207 A           ST      AC0,D7(AC2)
1161 1253 8200 A           LD      AC0,D0(AC2)
1162 1254 0723 A           SETBIT  D3              ; SET ERROR FLAG BIT 3
1163 1255 A200 A           ST      AC0,D0(AC2)
1164 1256 0200 A           RTS     D0
1165 1257          ;
1166 1257          ESYN1:                          ; RESET 1
1167 1257 2921 A           JSR     ESYA            ; COMPUTE ADDRESS OF DATA BUFFER (AC2)
1168 1258 8201 A           LD      AC0,D1(AC2)     ; RESET 1 POSITION (RTC UNITS)
1169 1259 D205 A           SUB     AC0,D5(AC2)     ; COMPARE WITH SYNCH DIAL TIMER
1170 125A 111D A           BOC     CCEZ,ESYN6      ; BRANCH IF DIAL IS AT RESET POINT
1171 125B 210B A           JMP     ESYN4
1172 125C          ;
1173 125C          ESYN2:                          ; RESET 2
1174 125C 291C A           JSR     ESYA            ; COMPUTE ADDRESS OF DATA BUFFER (AC2)
1175 125D 8202 A           LD      AC0,D2(AC2)     ; RESET 2 POSITION (RTC UNITS)
1176 125E D205 A           SUB     AC0,D5(AC2)     ; COMPARE WITH SYNCH DIAL TIMER
1177 125F 1118 A           BOC     CCEZ,ESYN6      ; BRANCH IF DIAL IS AT RESET POINT
1178 1260 2106 A           JMP     ESYN4
1179 1261          ;
1180 1261          ESYN3:                          ; RESET 3
1181 1261 2917 A           JSR     ESYA            ; COMPUTE ADDRESS OF DATA BUFFER (AC2)
1182 1262 8203 A           LD      AC0,D3(AC2)     ; RESET 3 POSITION (RTC UNITS)
1183 1263 D205 A           SUB     AC0,D5(AC2)     ; COMPARE WITH SYNCH DIAL TIMER
1184 1264 1113 A           BOC     CCEZ,ESYN6      ; BRANCH IF DIAL IS AT RESET POINT
1185 1265 2101 A           JMP     ESYN4
1186 1266          ;
1187 1266 2912 A ESYN4A:   JSR     ESYA            ; COMPUTE ADDRESS OF DATA BUFFER (AC2)
1188 1267          ESYN4:                          ; INCREMENT SYNCH DIAL TIMER
```

```
1189 1267 7A05 A          ISZ     D5(AC2)
1190 1268 2100 A          JMP     .+1
1191 1269 8200 A          LD      AC0,D0(AC2)     ; FETCH CYCLE LENGTH
1192 126A E205 A          SKG     AC0,D5(AC2)     ; SKIP IF BEFORE END OF CYCLE
1193 126B 2101 A          JMP     .+2
1194 126C 2105 A          JMP     ESYN5
1195 126D 4C00 A          LI      AC0,C0
1196 126E A205 A          ST      AC0,D5(AC2)     ; ZERO SYNCH DIAL TIMER
1197 126F 4C01 A          LI      AC0,C1
1198 1270 B09D A          ST      AC0,@AEPST      ; SET START PULSE
1199 1271 2106 A          JMP     ESYN6
1200 1272           ;
1201 1272           ESYN5:
1202 1272 8204 A          LD      AC0,D4(AC2)     ; FETCH END OF START PULSE
1203 1273 E205 A          SKG     AC0,D5(AC2)     ; SKIP IF BEFORE END OF START PULSE
1204 1274 2101 A          JMP     .+2
1205 1275 2102 A          JMP     ESYN6
1206 1276 4C00 A          LI      AC0,C0
1207 1277 B09D A          ST      AC0,@AEPST      ; RESET START PULSE
1208 1278           ;
1209 1278           ESYN6:
1210 1278 0200 A          RTS     D0              ; RETURN FROM ESYN
1211 1279           ;
1212 1279           ESYA:                           ; COMPUTE BASE ADDRESS OF SYNCH DATA
1213 1279                                           ;    FOR OPERATING DIAL, (AC2)
1214 1279 4C06 A          LI      AC0,C6          ; BUFFER LENGTH = 6
1215 127A 88A1 A          LD      AC2,AESYD       ; BASE ADDRESS FOR DIAL 1
1216 127B 9C83 A          LD      AC3,@ATCDS      ; CURRENT DIAL SELECTION
1217 127C 4BFF A ESYA1:   ISZ     AC3,CM1         ; SKIP IF BASE ADDRESS COMPUTED
1218 127D 2101 A          JMP     .+2
1219 127E 2102 A          JMP     ESYA2
1220 127F 3200 A          BADD    AC0,AC2         ; INCREMENT BY BUFFER LENGTH
1221 1280 21FB A          JMP     ESYA1
1222 1281           ESYA2:
1223 1281 0200 A          RTS     D0              ; RETURN FROM ESYA
1224 1282           ;
```

```
1227 1282                .LIST   LES
1228 1282          ;
1229 1282          ;                    ... MONITOR INTERCONNECT DATA (R1,R2,R3,D2,D3) ...
1230 1282          EMIC:
1231 1282          ;                    ... NOISE OR TRANSITION FILTER ON D2,D3 ...
1232 1282          ;
1233 1282 9069 A           LD      AC0,@ABDIN      ; ACCESS BDIN
1234 1283 611E A           AND     AC0,H0030       ; EXTRACT D2,D3 TO GET NEW EDN0
1235 1284 8CA5 A           LD      AC3,AEDN0       ; PAST VALUE BUFFER BASE ADDRESS
1236 1285 8700 A           LD      AC1,D0(AC3)     ; UPDATE PAST VALUES
1237 1286 8B01 A           LD      AC2,D1(AC3)
1238 1287 A300 A           ST      AC0,D0(AC3)     ; STORE IN BUFFER, EDN0, 0TH PAST VALUE
1239 1288 A701 A           ST      AC1,D1(AC3)     ;                  EDN1, 1ST PAST VALUE
1240 1289 AB02 A           ST      AC2,D2(AC3)     ;                  EDN2, 2ND PAST VALUE
1241 128A 3482 A           RXOR    AC1,AC0
1242 128B 1505 A           BOC     CCNZ,EMIC1      ; BRANCH IF EDN0.NE.EDN1
1243 128C 8300 A           LD      AC0,D0(AC3)     ; RESTORE EDN0
1244 128D 3882 A           RXOR    AC2,AC0
1245 128E 1502 A           BOC     CCNZ,EMIC1      ; BRANCH IF EDN0.NE.EDN2
1246 128F 8300 A           LD      AC0,D0(AC3)     ; RESTORE EDN0
1247 1290 B0A4 A           ST      AC0,@AED23      ; THREE PAST VALUES ARE IDENTICAL
1248 1291                                          ;    UPDATE INTERNAL DIAL SELECT DATUM
1249 1291          EMIC1:
1250 1291          ;                    ... NOISE OR TRANSITION FILTER ON R1,R2,R3 ...
1251 1291          ;
1252 1291 9069 A           LD      AC0,@ABDIN      ; ACCESS BDIN
1253 1292 610E A           AND     AC0,H000E       ; EXTRACT R1,R2,R3 TO GET NEW ERN0
1254 1293 8CA3 A           LD      AC3,AERN0       ; PAST VALUE BUFFER BASE ADDRESS
1255 1294 8700 A           LD      AC1,D0(AC3)     ; UPDATE PAST VALUES
1256 1295 8B01 A           LD      AC2,D1(AC3)
1257 1296 A300 A           ST      AC0,D0(AC3)     ; STORE IN BUFFER, ERN0, 0TH PAST VALUE
1258 1297 A701 A           ST      AC1,D1(AC3)     ;                  ERN1, 1ST PAST VALUE
1259 1298 AB02 A           ST      AC2,D2(AC3)     ;                  ERN2, 2ND PAST VALUE
1260 1299 3482 A           RXOR    AC1,AC0
1261 129A 1505 A           BOC     CCNZ,EMIC2      ; BRANCH IF ERN0.NE.ERN1
1262 129B 8300 A           LD      AC0,D0(AC3)     ; RESTORE ERN0
1263 129C 3882 A           RXOR    AC2,AC0
1264 129D 1502 A           BOC     CCNZ,EMIC2      ; BRANCH IF ERN0.NE.ERN2
1265 129E 8300 A           LD      AC0,D0(AC3)     ; RESTORE ERN0
1266 129F B0A2 A           ST      AC0,@AER123     ; THREE PAST VALUES ARE IDENTICAL
1267 12A0                                          ;    UPDATE INTERNAL RESET SELECT DATUM
1268 12A0          EMIC2:
1269 12A0 0200 A           RTS     D0              ; RETURN FROM EMIC
1270 12A1          ;
1271 12A1          ;                    ... LOCAL DATA ...
1272 12A1 000E A H000E:    .WORD   X'000E          ; BITS 1,2,3 SET
1273 12A2 0030 A H0030:    .WORD   X'0030          ; BITS 4,5 SET
1274 12A3          ;
```

EXECUTIVE CPC - TIMING FUNCTIONS

```
1277 12A3                .LIST   LES
1278 12A3          ;
1279 12A3          ;                    ... EXECUTIVE TIMING ROUTINE ...
1280 12A3          ETIM:
1281 12A3 2100 A           JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
1282 12A4          ;
1283 12A4 9069 A           LD      AC0,@ABDIN              ; FETCH BDIN
1284 12A5 075E A           SKBIT   D14                     ; SKIP IF WAIT CONDITION
1285 12A6 2101 A           JMP     .+2
1286 12A7 2105 A           JMP     ETIM1
1287 12A8                                                  ; BYPASS THESE FNS IN THE WAIT STATE
1288 12A8 909B A           LD      AC0,@AETCY              ; TIMING PLAN CYCLE TIMER
1289 12A9 4801 A           AISZ    AC0,C1                  ; INCREMENT TIMERS
1290 12AA 2100 A           JMP     .+1
1291 12AB B09B A           ST      AC0,@AETCY              ; STORE CYCLE TIMER
1292 12AC B09C A           ST      AC0,@AETST              ; STORE 'WAIT FOR SYNCH START' TIMER
1293 12AD          ;
1294 12AD 90A6 A ETIM1:    LD      AC0,@AEDMIT             ; INCREMENT DETECTOR MONITORING
1295 12AE 4801 A           AISZ    AC0,C1                  ;    INTERVAL TIMER
1296 12AF 2100 A           JMP     .+1
1297 12B0 B0A6 A           ST      AC0,@AEDMIT
1298 12B1          ;
1299 12B1 0200 A ETIMR:    RTS     D0
1300 12B2          ;
```

```
1303 12B2                .LIST   LES
1304 12B2          ;
1305 12B2          ;                  ... DETECTOR MONITORING ROUTINE ...
1306 12B2          EDET:
1307 12B2 90A6 A           LD      AC0,@AEDMIT     ; FETCH TIMER
1308 12B3 E128 A           SKG     AC0,EDETI       ; SKIP IF DETECTOR MONITORING INTERVAL
1309 12B4                                          ;    HAS BEEN REACHED
1310 12B4 2126 A           JMP     EDETR
1311 12B5          ;
1312 12B5 8C7C A           LD      AC3,AVCVC       ; BASE ADDRESS OF VEHICLE COUNTERS
1313 12B6          ;
1314 12B6 8300 A EDET1:    LD      AC0,(AC3)       ; FETCH NEXT VEHICLE COUNTER
1315 12B7 E125 A           SKG     AC0,EDETM       ; SKIP IF GT MINIMUM COUNT
1316 12B8 2101 A           JMP     .+2             ; UNDERCOUNTING ERROR
1317 12B9 2119 A           JMP     EDET3           ; NO ERROR
1318 12BA          ;
1319 12BA          ;                  ... UNDERCOUNTING ERROR ...
1320 12BA 3E81 A           RCPY    AC3,AC2         ; COPY CURRENT VEHICLE COUNTER ADDRESS
1321 12BB 847C A           LD      AC1,AVCVC       ; BASE ADDRESS OF VEHICLE COUNTERS
1322 12BC 5101 A           CAI     AC1,C1          ; COMPUTE DETECTOR INDEX
1323 12BD 3600 A           RADD    AC1,AC2
1324 12BE E91F A           SKG     AC2,EDET32      ; SKIP IF INVALID INDEX
1325 12BF 2106 A           JMP     EDET2
1326 12C0          ;
1327 12C0          ;                  ... RECORD DETECTOR INDEX ERROR ...
1328 12C0 3981 A           RCPY    AC2,AC1         ; COPY ERROR DATUM TO AC1
1329 12C1 BCA7 A           ST      AC3,@AEDETT     ; STORE VEHICLE COUNTER ADDRESS IN TEMP
1330 12C2 8C9F A           LD      AC3,AEERR       ; BASE ADDRESS OF ERROR BUFFER
1331 12C3 2C4E A           JSR     @AERE5          ; AC1 HAS ERROR DATUM
1332 12C4 9CA7 A           LD      AC3,@AEDETT     ; RESTORE VEHICLE COUNTER ADDRESS
1333 12C5 210D A           JMP     EDET3
1334 12C6          ;
1335 12C6          ;                  ... RECORD ERROR CURRENT DETECTOR ...
1336 12C6 B8A7 A EDET2:    ST      AC2,@AEDETT     ; STORE DETECTOR INDEX IN TEMP LOC
1337 12C7 5E01 A           SHL     AC2,D1          ; MPY BY 2 FOR DISP IN ERROR BUFFER
1338 12C8 C8A8 A           ADD     AC2,AEDERR      ; ADD TO BASE ADDRESS
1339 12C9 A201 A           ST      AC0,D1(AC2)     ; STORE UNDERCOUNT VALUE
1340 12CA 8200 A           LD      AC0,D0(AC2)     ; INCREMENT ERROR COUNTER
1341 12CB 4801 A           AISZ    AC0,C1
1342 12CC 2100 A           JMP     .+1
1343 12CD A200 A           ST      AC0,D0(AC2)
1344 12CE          ;
1345 12CE          ;                  ... RECORD GENERAL UNDERCOUNTING ERROR ...
1346 12CE 94A7 A           LD      AC1,@AEDETT     ; TEMP HAS DETECTOR INDEX, ERROR DATUM
1347 12CF BCA7 A           ST      AC3,@AEDETT     ; STORE VEHICLE COUNTER ADDRESS IN TEMP
1348 12D0 8C9F A           LD      AC3,AEERR       ; BASE ADDRESS OF ERROR BUFFER
1349 12D1 2C4D A           JSR     @AERE4          ; AC1 HAS ERROR DATUM
1350 12D2 9CA7 A           LD      AC3,@AEDETT     ; RESTORE VEHICLE COUNTER ADDRESS
1351 12D3          ;
1352 12D3 4C00 A EDET3:    LI      AC0,C0
1353 12D4 A300 A           ST      AC0,(AC3)       ; ZERO VEHICLE COUNTER
1354 12D5 4B01 A           AISZ    AC3,C1          ; INCREMENT VEHICLE COUNTER ADDRESS
```

```
1355 12D6 2100 A          JMP     .+1
1356 12D7 ED07 A          SKG     AC3,EVCVC       ; SKIP IF ALL VEHICLE COUNTERS PROCESSED
1357 12D8 21DD A          JMP     EDET1
1358 12D9 4C00 A          LI      AC0,C0
1359 12DA B0A6 A          ST      AC0,@AEDMIT     ; ZERO DETECTOR MONITORING INT TIMER
1360 12DB                 ;
1361 12DB 0200 A EDETR:   RTS     D0              ; RETURN FROM EDET
1362 12DC                 ;
1363 12DC                 ;                   ... LOCAL DATA ...
1364 12DC 2EE0 A EDETI:   .WORD   12000           ; DET MONITORING INT (0.1 SEC UNITS)
1365 12DD 0001 A EDETM:   .WORD   1               ; MINIMUM VEHICLE COUNT
1366 12DE 001F A EDET32:  .WORD   31              ; MAXIMUM DETECTOR INDEX (0 - 31)
1367 12DF 3131 A EVCVC:   .WORD   VCVC+DETS-1     ; ADDRESS OF LAST DETECTOR VEHICLE CTR
1368 12E0                                         ;    (BASE ADDR + NO. DETECTORS - 1)
1369 12E0                 ;
```

```
1372 12E0                .LIST   LES
1373 12E0          ;
1374 12E0          ;                  ... CONSTRUCT STATUS DISPLAY WORD ...
1375 12F0          ESDW:
1376 12F0          ;
1377 12F0          ;                  ... BITS 15 TO 11 ...
1378 12F0 90A2 A           LD      AC0,@AER123     ; R1,R2,R3,IN BITS 1 TO 3
1379 12E1 88A4 A           LD      AC2,AED23
1380 12E2 6A00 A           OR      AC0,(AC2)       ; D2,D3 IN BITS 4,5
1381 12E3 0A80 A           PFLG    SELF            ; ASSURE SEL = 0
1382 12E4 58FA A           ROR     AC0,D6          ; R1,R2,R3,D2,D3 IN BITS 11 TO 15
1383 12E5 6132 A           AND     AC0,HF800       ; ASSURE BITS 10 TO 0 RESET
1384 12E6 3181 A           RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1385 12E7          ;
1386 12E7          ;                  ... BIT 10 ...
1387 12E7 909D A           LD      AC0,@AEPST
1388 12E8 1103 A           BOC     CCEZ,.+4        ; BRANCH IF NO START PULSE
1389 12E9 3481 A           RCPY    AC1,AC0
1390 12EA 072A A           SETBIT  D10             ; START PULSE
1391 12EB 3181 A           RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1392 12EC          ;
1393 12EC          ;                  ... BIT 7 ...
1394 12EC 906E A           LD      AC0,@APIP
1395 12ED 1103 A           BOC     CCEZ,.+4        ; BRANCH IF NO PREEMPT IN PROGRESS
1396 12EE 3481 A           RCPY    AC1,AC0
1397 12EF 0727 A           SETBIT  D7              ; PREEMPT IN PROGRESS
1398 12F0 3181 A           RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1399 12F1          ;
1400 12F1          ;                  ... BIT 6 ...
1401 12F1 907B A           LD      AC0,@AVCBT      ; VEHICLE CLASSIFICATION FLAG
1402 12F2 1103 A           BOC     CCEZ,.+4        ; BRANCH IF NO RECENT BUS CLASS.
1403 12F3 3481 A           RCPY    AC1,AC0
1404 12F4 0726 A           SETBIT  D6              ; BUS CLASSIFIED DURING NEAR PAST
1405 12F5 3181 A           RCPY    AC0,AC1         ; STORE TEMPORARY RESULT
1406 12F6          ;
1407 12F6          ;                  ... BITS 5 THRU 0 REQUIRE MANUAL RESET ...
1408 12F6          ;
1409 12F6          ;                  ... BIT 5 ...
1410 12F6 909F A           LD      AC0,@AEERR
1411 12F7 6121 A           AND     AC0,HFFEF       ; IGNORE DETECTOR UNDERCOUNT ERROR
1412 12F8 1508 A           BOC     CCNZ,ESDW1      ; BRANCH IF ERROR
1413 12F9 906C A           LD      AC0,@AXERR
1414 12FA 1506 A           BOC     CCNZ,ESDW1      ; BRANCH IF ERROR
1415 12FB 906A A           LD      AC0,@ABERR
1416 12FC 1504 A           BOC     CCNZ,ESDW1      ; BRANCH IF ERROR
1417 12FD 9090 A           LD      AC0,@ATERR
1418 12FE 1502 A           BOC     CCNZ,ESDW1      ; BRANCH IF ERROR
1419 12FF 9077 A           LD      AC0,@APEPR
1420 1300 1103 A           BOC     CCEZ,.+4
1421 1301          ESDW1:
1422 1301 3481 A           RCPY    AC1,AC0
1423 1302 0725 A           SETBIT  D5              ; SOFTWARE DETECTED ERROR
```

```
1424 1303 3181 A          RCPY    AC0,AC1          ; STORE TEMPORARY RESULT
1425 1304          ;
1426 1304          ;                    ... BIT 4 ...
1427 1304 909F A          LD      AC0,@AEERR
1428 1305 6114 A          AND     AC0,H0010        ; EXTRACT DETECTOR UNDERCOUNT FLAG
1429 1306 1103 A          BOC     CCEZ,.+4         ; BRANCH IF NO DETECTOR UNDERCOUNT ERROR
1430 1307 3481 A          RCPY    AC1,AC0
1431 1308 0724 A          SETBIT  D4               ; DETECTOR UNDERCOUNT ERROR
1432 1309 3181 A          RCPY    AC0,AC1          ; STORE TEMPORARY RESULT
1433 130A          ;
1434 130A          ;                    ... BIT 2 ...
1435 130A 9069 A          LD      AC0,@ABDIN       ; DISCRETE INPUT WORD
1436 130B 0756 A          SKBIT   D6               ; CMU CONFLICT INDICATION
1437 130C 2103 A          JMP     .+4
1438 130D 3481 A          RCPY    AC1,AC0
1439 130E 0722 A          SETBIT  D2               ; CMU CONFLICT
1440 130F 3181 A          RCPY    AC0,AC1          ; STORE TEMPORARY RESULT
1441 1310          ;
1442 1310          ;                    ... BIT 1 ...
1443 1310 9069 A          LD      AC0,@ABDIN       ; DISCRETE INPUT WORD
1444 1311 075F A          SKBIT   D15              ; SKIP IF EXTERNAL DISCONNECT
1445 1312 2103 A          JMP     .+4
1446 1313 3481 A          RCPY    AC1,AC0
1447 1314 0721 A          SETBIT  D1               ; EXTERNAL DISCONNECT
1448 1315 3181 A          RCPY    AC0,AC1          ; STORE TEMPORARY RESULT
1449 1316          ;
1450 1316 B468 A          ST      AC1,@AXBUF       ; STORE STATUS DISPLAY WORD
1451 1317          ;
1452 1317 0200 A          RTS     D0               ; RETURN FROM ESDW
1453 1318          ;
1454 1318          ;                    ... LOCAL DATA ...
1455 1318 F800 A HF800:   .WORD   X'F800           ; BITS 10 TO 0 RESET
1456 1319 FFEF A HFFEF:   .WORD   X'FFEF           ; BIT 4 RESET
1457 131A 0010 A H0010:   .WORD   X'0010           ; BIT 4 SET
1458 131B          ;
1459 131B          ;
```

```
1462 131B                .LIST   LES
1463 131B        ;
1464 131B        ;                  ... END OF CYCLE ROUTINE ...
1465 131B        ;
1466 131B       EEOC:
1467 131B 4C01 A         LI      AC0,C1
1468 131C B086 A         ST      AC0,@ATFST      ; SET 'WAIT FOR SYNCH START' FLAG
1469 131D        ;
1470 131D        ;                  ... SUBSEQUENT FNS MAY RESET THIS FLAG ...
1471 131D        ;
1472 131D        ;
1473 131D        ;                  ... PREEMPT FUNCTIONS ...
1474 131D 2903 A         JSR     EPEOC
1475 131E        ;
1476 131E        ;                  ... TIMING PLAN FUNCTIONS ...
1477 131E 2C37 A         JSR     @ATNCY
1478 131F        ;
1479 131F        ;                  ... EXECUTIVE TIMING FUNCTIONS ...
1480 131F 2913 A         JSR     ETEOC
1481 1320        ;
1482 1320 0200 A         RTS     D0              ; RETURN FROM EEOC
1483 1321        ;
1484 1321        ;                  ... END OF CYCLE PREEMPT FUNCTIONS ...
1485 1321       EPEOC:
1486 1321 9C74 A         LD      AC0,@APFREQ     ; TEST FOR PREEMPT MOD OF THE PAST CYCLE
1487 1322 1501 A         BOC     CCNZ,.+2        ; BRANCH IF PREEMPT MOD
1488 1323 2102 A         JMP     .+3
1489 1324 4C00 A         LI      AC0,C0
1490 1325 B086 A         ST      AC0,@ATFST      ; RESET 'WAIT FOR SYNC START' FLAG
1491 1326 4C00 A         LI      AC0,C0
1492 1327 B074 A         ST      AC0,@APFREQ     ; RESET PREEMPT MOD FLAG
1493 1328        ;
1494 1328                                        ; CLEAR PREEMPT MONITOR INDEX FLAGS
1495 1328 8873 A         LD      AC2,APMIF
1496 1329 8200 A         LD      AC0,D0(AC2)
1497 132A 60F0 A         AND     AC0,H7FFF       ; RESET BIT 15
1498 132B A200 A         ST      AC0,D0(AC2)
1499 132C 8201 A         LD      AC0,D1(AC2)
1500 132D 60F0 A         AND     AC0,H7FFF       ; RESET BIT 15
1501 132E A201 A         ST      AC0,D1(AC2)
1502 132F 8202 A         LD      AC0,D2(AC2)
1503 1330 60F0 A         AND     AC0,H7FFF       ; RESET BIT 15
1504 1331 A202 A         ST      AC0,D2(AC2)
1505 1332        ;
1506 1332 0200 A         RTS     D0              ; RETURN FROM EPEOC
1507 1333        ;
1508 1333        ;                  ... END OF CYCLE EXECUTIVE TIMING ROUTINE ...
1509 1333       ETEOC:
1510 1333 889B A         LD      AC2,AETCY       ; TIMING PLAN CYCLE TIMER
1511 1334 8600 A         LD      AC1,D0(AC2)
1512 1335 E601 A         SKG     AC1,D1(AC2)     ; SKIP IF GREATER THAN PREVIOUS MAXIMUM
1513 1336 2102 A         JMP     ETEOC1
```

EXECUTIVE CPC - END OF CYCLE FUNCTIONS

```
1514 1337 A601 A          ST      AC1,D1(AC2)      ; STORE NEW MAXIMUM
1515 1338 2104 A          JMP     ETEOC2
1516 1339 3481 A ETEOC1:  RCPY    AC1,AC0
1517 133A D202 A          SUB     AC0,D2(AC2)
1518 133B 1201 A          DOC     CCZP,ETEOC2      ; BRANCH IF GREATER THAN PREVIOUS MIN.
1519 133C A602 A          ST      AC1,D2(AC2)
1520 133D 4D00 A ETEOC2:  LI      AC1,C0
1521 133E A600 A          ST      AC1,D0(AC2)      ; ZERO CYCLE TIMER
1522 133F         ;
1523 133F 0200 A          RTS     D0               ; RETURN FROM ETEOC
1524 1340         ;
```

```
1527 1340                .LIST   LER
1528 1340        ;
1529 1340        ;                  ... ERROR RECORDING ROUTINE ...
1530 1340        ;
1531 1340        ;                        UPON ENTRY, AC1 = ERROR DATUM
1532 1340        ;                                    AC3 = BASE ADDR OF ERROR BUFFER
1533 1340        ;                                    AC0 USED TO SET ERROR FLAG
1534 1340        ;                                ENTRY POINT IMPLIES ERROR TYPE
1535 1340        ;
1536 1340        ERE0:
1537 1340 A702 A         ST      AC1,D2(AC3)     ; STORE ERROR DATUM
1538 1341 8301 A         LD      AC0,D1(AC3)     ; FETCH ERROR COUNTER
1539 1342 4801 A         AISZ    AC0,C1          ; INCREMENT
1540 1343 2100 A         JMP     .+1
1541 1344 A301 A         ST      AC0,D1(AC3)
1542 1345 8300 A         LD      AC0,D0(AC3)
1543 1346 0720 A         SETBIT  D0              ; SET ERROR FLAG BIT 0
1544 1347 A300 A         ST      AC0,D0(AC3)
1545 1348 0200 A         RTS     D0              ; RETURN FROM ERE0
1546 1349        ;
1547 1349        ERE1:
1548 1349 A704 A         ST      AC1,D4(AC3)     ; STORE ERROR DATUM
1549 134A 8303 A         LD      AC0,D3(AC3)     ; FETCH ERROR COUNTER
1550 134B 4801 A         AISZ    AC0,C1          ; INCREMENT
1551 134C 2100 A         JMP     .+1
1552 134D A303 A         ST      AC0,D3(AC3)
1553 134E 8300 A         LD      AC0,D0(AC3)
1554 134F 0721 A         SETBIT  D1              ; SET ERROR FLAG BIT 1
1555 1350 A300 A         ST      AC0,D0(AC3)
1556 1351 0200 A         RTS     D0              ; RETURN FROM ERE1
1557 1352        ;
1558 1352        ERE2:
1559 1352 A706 A         ST      AC1,D6(AC3)     ; STORE ERROR DATUM
1560 1353 8305 A         LD      AC0,D5(AC3)     ; FETCH ERROR COUNTER
1561 1354 4801 A         AISZ    AC0,C1          ; INCREMENT
1562 1355 2100 A         JMP     .+1
1563 1356 A305 A         ST      AC0,D5(AC3)
1564 1357 8300 A         LD      AC0,D0(AC3)
1565 1358 0722 A         SETBIT  D2              ; SET ERROR FLAG BIT 2
1566 1359 A300 A         ST      AC0,D0(AC3)
1567 135A 0200 A         RTS     D0              ; RETURN FROM ERE2
1568 135B        ;
1569 135B        ERE3:
1570 135B A708 A         ST      AC1,D8(AC3)     ; STORE ERROR DATUM
1571 135C 8307 A         LD      AC0,D7(AC3)     ; FETCH ERROR COUNTER
1572 135D 4801 A         AISZ    AC0,C1          ; INCREMENT
1573 135E 2100 A         JMP     .+1
1574 135F A307 A         ST      AC0,D7(AC3)
1575 1360 8300 A         LD      AC0,D0(AC3)
1576 1361 0723 A         SETBIT  D3              ; SET ERROR FLAG BIT 3
1577 1362 A300 A         ST      AC0,D0(AC3)
1578 1363 0200 A         RTS     D0              ; RETURN FROM ERE3
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```
1579 1364          ;
1580 1364          ERE4:
1581 1364 A70A A        ST      AC1,D10(AC3)    ; STORE ERROR DATUM
1582 1365 8309 A        LD      AC0,D9(AC3)     ; FETCH ERROR COUNTER
1583 1366 4801 A        AISZ    AC0,C1          ; INCREMENT
1584 1367 2100 A        JMP     .+1
1585 1368 A309 A        ST      AC0,D9(AC3)
1586 1369 8300 A        LD      AC0,D0(AC3)
1587 136A 0724 A        SETBIT  D4              ; SET ERROR FLAG BIT 4
1588 136B A300 A        ST      AC0,D0(AC3)
1589 136C 0200 A        RTS     D0              ; RETURN FROM ERE4
1590 136D          ;
1591 136D          ERE5:
1592 136D A70C A        ST      AC1,D12(AC3)    ; STORE ERROR DATUM
1593 136E 830B A        LD      AC0,D11(AC3)    ; FETCH ERROR COUNTER
1594 136F 4801 A        AISZ    AC0,C1          ; INCREMENT
1595 1370 2100 A        JMP     .+1
1596 1371 A30B A        ST      AC0,D11(AC3)
1597 1372 8300 A        LD      AC0,D0(AC3)
1598 1373 0725 A        SETBIT  D5              ; SET ERROR FLAG BIT 5
1599 1374 A300 A        ST      AC0,D0(AC3)
1600 1375 0200 A        RTS     D0              ; RETURN FROM ERE5
1601 1376          ;
1602 1376          ERE6:
1603 1376 A70E A        ST      AC1,D14(AC3)    ; STORE ERROR DATUM
1604 1377 830D A        LD      AC0,D13(AC3)    ; FETCH ERROR COUNTER
1605 1378 4801 A        AISZ    AC0,C1          ; INCREMENT
1606 1379 2100 A        JMP     .+1
1607 137A A30D A        ST      AC0,D13(AC3)
1608 137B 8300 A        LD      AC0,D0(AC3)
1609 137C 0726 A        SETBIT  D6              ; SET ERROR FLAG BIT 6
1610 137D A300 A        ST      AC0,D0(AC3)
1611 137E 0200 A        RTS     D0              ; RETURN FROM ERE6
1612 137F          ;
1613 137F          ERE7:
1614 137F A710 A        ST      AC1,D16(AC3)    ; STORE ERROR DATUM
1615 1380 830F A        LD      AC0,D15(AC3)    ; FETCH ERROR COUNTER
1616 1381 4801 A        AISZ    AC0,C1          ; INCREMENT
1617 1382 2100 A        JMP     .+1
1618 1383 A30F A        ST      AC0,D15(AC3)
1619 1384 8300 A        LD      AC0,D0(AC3)
1620 1385 0727 A        SETBIT  D7              ; SET ERROR FLAG BIT 7
1621 1386 A300 A        ST      AC0,D0(AC3)
1622 1387 0200 A        RTS     D0              ; RETURN FROM ERE7
1623 1388          ;
1624 1388          ERE8:
1625 1388 A712 A        ST      AC1,D18(AC3)    ; STORE ERROR DATUM
1626 1389 8311 A        LD      AC0,D17(AC3)    ; FETCH ERROR COUNTER
1627 138A 4801 A        AISZ    AC0,C1          ; INCREMENT
1628 138B 2100 A        JMP     .+1
1629 138C A311 A        ST      AC0,D17(AC3)
1630 138D 8300 A        LD      AC0,D0(AC3)
```

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1631 138E 0728 A          SETBIT  D8              ; SET ERROR FLAG BIT 8
1632 138F A300 A          ST      AC0,D0(AC3)
1633 1390 0200 A          RTS     D0              ; RETURN FROM ERE8
1634 1391          ;
1635 1391          ERE9:
1636 1391 A714 A          ST      AC1,D20(AC3)    ; STORE ERROR DATUM
1637 1392 8313 A          LD      AC0,D19(AC3)    ; FETCH ERROR COUNTER
1638 1393 4801 A          AISZ    AC0,C1          ; INCREMENT
1639 1394 2100 A          JMP     .+1
1640 1395 A313 A          ST      AC0,D19(AC3)
1641 1396 8300 A          LD      AC0,D0(AC3)
1642 1397 0729 A          SETBIT  D9              ; SET ERROR FLAG BIT 9
1643 1398 A300 A          ST      AC0,D0(AC3)
1644 1399 0200 A          RTS     D0              ; RETURN FROM ERE9
1645 139A          ;
1646 139A          ERE10:
1647 139A A716 A          ST      AC1,D22(AC3)    ; STORE ERROR DATUM
1648 139B 8315 A          LD      AC0,D21(AC3)    ; FETCH ERROR COUNTER
1649 139C 4801 A          AISZ    AC0,C1          ; INCREMENT
1650 139D 2100 A          JMP     .+1
1651 139E A315 A          ST      AC0,D21(AC3)
1652 139F 8300 A          LD      AC0,D0(AC3)
1653 13A0 072A A          SETBIT  D10             ; SET ERROR FLAG BIT 10
1654 13A1 A300 A          ST      AC0,D0(AC3)
1655 13A2 0200 A          RTS     D0              ; RETURN FROM ERE10
1656 13A3          ;
1657 13A3          ERE11:
1658 13A3 A718 A          ST      AC1,D24(AC3)    ; STORE ERROR DATUM
1659 13A4 8317 A          LD      AC0,D23(AC3)    ; FETCH ERROR COUNTER
1660 13A5 4801 A          AISZ    AC0,C1          ; INCREMENT
1661 13A6 2100 A          JMP     .+1
1662 13A7 A317 A          ST      AC0,D23(AC3)
1663 13A8 8300 A          LD      AC0,D0(AC3)
1664 13A9 072B A          SETBIT  D11             ; SET ERROR FLAG BIT 11
1665 13AA A300 A          ST      AC0,D0(AC3)
1666 13AB 0200 A          RTS     D0              ; RETURN FROM ERE11
1667 13AC          ;
1668 13AC          ERE12:
1669 13AC A71A A          ST      AC1,D26(AC3)    ; STORE ERROR DATUM
1670 13AD 8319 A          LD      AC0,D25(AC3)    ; FETCH ERROR COUNTER
1671 13AE 4801 A          AISZ    AC0,C1          ; INCREMENT
1672 13AF 2100 A          JMP     .+1
1673 13B0 A319 A          ST      AC0,D25(AC3)
1674 13B1 8300 A          LD      AC0,D0(AC3)
1675 13B2 072C A          SETBIT  D12             ; SET ERROR FLAG BIT 12.
1676 13B3 A300 A          ST      AC0,D0(AC3)
1677 13B4 0200 A          RTS     D0              ; RETURN FROM ERE12
1678 13B5          ;
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1679 13P5                .PAGE
1680 13B5                .ASECT
1681 13B5 1400 A         .=X'1400
1682 1400        ;
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1685 1400                .LIST   LPP
1686 1400          ;
1687 1400          ;                    ... PROGRAMMABLE PANEL ROUTINE ...
1688 1400          ;
1689 1400          ;              (EXECUTED DURING RESTART INITIALIZATION ONLY)
1690 1400          ;
1691 1400          EPAN:
1692 1400          ;
1693 1400          ;                    ... INPUT PROG. PANEL DATA ...
1694 1400 2C3E A           JSR     @ABPAN
1695 1401          ;
1696 1401          ;                    ... CLEAR ERROR FLAGS ...
1697 1401 4C00 A           LI      AC0,C0
1698 1402 B0CD A           ST      AC0,@AEP1E      ; PLAN 1
1699 1403 B0CE A           ST      AC0,@AEP2E      ; PLAN 2
1700 1404 B0CF A           ST      AC0,@AEP3E      ; PLAN 3
1701 1405 B0D0 A           ST      AC0,@AEPDVE     ; DATA VALIDITY
1702 1406          ;
1703 1406          ;                    ... TURN OFF ERROR LIGHTS ...
1704 1406 8CEA A           LD      AC3,APP1U       ; PERIPHERAL DEVICE ADDRESS PLAN 1
1705 1407 2C57 A           JSR     @AXLOF1
1706 1408          ;
1707 1408 8CEB A           LD      AC3,APP2U       ; PERIPHERAL DEVICE ADDRESS PLAN 2
1708 1409 2C57 A           JSR     @AXLOF1
1709 140A          ;
1710 140A 8CEC A           LD      AC3,APP3U       ; PERIPHERAL DEVICE ADDRESS PLAN 3
1711 140B 2C57 A           JSR     @AXLOF1
1712 140C          ;
1713 140C 8CE9 A           LD      AC3,APPDU       ; DEVICE ADDRESS DATA VALIDITY LIGHT
1714 140D 2C59 A           JSR     @AXLOF2
1715 140E          ;
1716 140E          ;                    ... COMPUTE SUM OF FIXED INTERVALS IN PLAN 1 ...
1717 140E 888B A           LD      AC2,ATPM1
1718 140F 2951 A           JSR     EPFI
1719 1410 8CC5 A           LD      AC3,AEPFT
1720 1411 A700 A           ST      AC1,D0(AC3)     ; STORE SUM
1721 1412          ;
1722 1412          ;                    ... COMPUTE SUM OF FIXED INTERVALS IN PLAN 2 ...
1723 1412 888C A           LD      AC2,ATPM2
1724 1413 294D A           JSR     EPFI
1725 1414 8CC5 A           LD      AC3,AEPFT
1726 1415 A701 A           ST      AC1,D1(AC3)     ; STORE SUM
1727 1416          ;
1728 1416          ;                    ... COMPUTE SUM OF FIXED INTERVALS IN PLAN 3 ...
1729 1416 888D A           LD      AC2,ATPM3
1730 1417 2949 A           JSR     EPFI
1731 1418 8CC5 A           LD      AC3,AEPFT
1732 1419 A702 A           ST      AC1,D2(AC3)     ; STORE SUM
1733 141A          ;
1734 141A          ;                    ... TEST ADJUSTABLE INTERVALS FOR 0 DURATION ...
1735 141A 888B A           LD      AC2,ATPM1
1736 141B 9493 A           LD      AC1,@ATAI1      ; RELATIVE INDEX OF ADJ INT 1
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1737 141C 3600 A          RADD    AC1,AC2          ; COMPUTE ADDRESS OF ADJUSTABLE INT 1
1738 141D 8200 A          LD      AC0,D0(AC2)      ; FETCH DURATION
1739 141E 1107 A          BOC     CCEZ,EPAN1       ; BRANCH IF ZERO, NO ERROR
1740 141F 8CD1 A          LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
1741 1420          ;
1742 1420          ;                  ... RECORD ERROR IN MASTER TIMING PLAN ...
1743 1420          EPANE:
1744 1420 3981 A          RCPY    AC2,AC1          ; SAVE ADDRESS AS ERROR DATUM
1745 1421 2C49 A          JSR     @AERE0
1746 1422 2C3A A EPANE1:  JSR     @AXWDT           ; ISSUE RESET PULSE TO WATCHDOG TIMER
1747 1423          ;
1748 1423 2C2F A          JSR     @AEADC           ; FATAL ERROR, DISCONNECT, NO RETURN
1749 1424          ;
1750 1424 2100 A          JMP     .+1              ; THIS INST SHOULD NEVER BE REACHED
1751 1425 21FE A          JMP     .-1
1752 1426          ;
1753 1426          EPAN1:
1754 1426 888B A          LD      AC2,ATPM1
1755 1427 9494 A          LD      AC1,@ATAI2       ; RELATIVE INDEX OF ADJ INT 2
1756 1428 3600 A          RADD    AC1,AC2          ; COMPUTE ADDRESS OF ADJUSTABLE INT 2
1757 1429 8200 A          LD      AC0,D0(AC2)      ; FETCH DURATION
1758 142A 1102 A          BOC     CCEZ,.+3         ; BRANCH IF ZERO, NO ERROR
1759 142B 8CD1 A          LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
1760 142C 21F3 A          JMP     EPANE
1761 142D          ;
1762 142D 888C A          LD      AC2,ATPM2
1763 142E 9493 A          LD      AC1,@ATAI1       ; RELATIVE INDEX OF ADJ INT 1
1764 142F 3600 A          RADD    AC1,AC2          ; COMPUTE ADDRESS OF ADJUSTABLE INT 1
1765 1430 8200 A          LD      AC0,D0(AC2)      ; FETCH DURATION
1766 1431 1102 A          BOC     CCEZ,.+3         ; BRANCH IF ZERO, NO ERROR
1767 1432 8CD2 A          LD      AC3,AEPEF2       ; BASE ADDRESS OF ERROR BUFFER
1768 1433 21EC A          JMP     EPANE
1769 1434          ;
1770 1434 888C A          LD      AC2,ATPM2
1771 1435 9494 A          LD      AC1,@ATAI2       ; RELATIVE INDEX OF ADJ INT 2
1772 1436 3600 A          RADD    AC1,AC2          ; COMPUTE ADDRESS OF ADJUSTABLE INT 2
1773 1437 8200 A          LD      AC0,D0(AC2)      ; FETCH DURATION
1774 1438 1102 A          BOC     CCEZ,.+3         ; BRANCH IF ZERO, NO ERROR
1775 1439 8CD2 A          LD      AC3,AEPEF2       ; BASE ADDRESS OF ERROR BUFFER
1776 143A 21E5 A          JMP     EPANE
1777 143B          ;
1778 143B 888D A          LD      AC2,ATPM3
1779 143C 9493 A          LD      AC1,@ATAI1       ; RELATIVE INDEX OF ADJ INT 1
1780 143D 3600 A          RADD    AC1,AC2          ; COMPUTE ADDRESS OF ADJUSTABLE INT 1
1781 143E 8200 A          LD      AC0,D0(AC2)      ; FETCH DURATION
1782 143F 1102 A          BOC     CCEZ,.+3         ; BRANCH IF ZERO, NO ERROR
1783 1440 8CD3 A          LD      AC3,AEPEF3       ; BASE ADDRESS OF ERROR BUFFER
1784 1441 21DE A          JMP     EPANE
1785 1442          ;
1786 1442 888D A          LD      AC2,ATPM3
1787 1443 9494 A          LD      AC1,@ATAI2       ; RELATIVE INDEX OF ADJ INT 2
1788 1444 3600 A          RADD    AC1,AC2          ; COMPUTE ADDRESS OF ADJUSTABLE INT 2
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1789 1445 8200 A        LD      AC0,D0(AC2)     ; FETCH DURATION
1790 1446 1102 A        BOC     CCEZ,.+3        ; BRANCH IF ZERO, NO ERROR
1791 1447 8CD3 A        LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
1792 1448 21D7 A        JMP     EPANE
1793 1449       ;
1794 1449       ;                  ... PROCESS PLAN 1 DATA ...
1795 1449 2C41 A        JSR     @AEPP1
1796 144A       ;
1797 144A       ;                  ... PROCESS PLAN 2 DATA ...
1798 144A 2C42 A        JSR     @AEPP2
1799 144B       ;
1800 144B       ;                  ... PROCESS PLAN 3 DATA ...
1801 144B 2C43 A        JSR     @AEPP3
1802 144C       ;
1803 144C       ;                  ... TEST ERROR FLAGS ...
1804 144C 90CD A        LD      AC0,@AEP1E      ; PLAN 1
1805 144D 1102 A        BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1806 144E 8CEA A        LD      AC3,APP1U
1807 144F 2C56 A        JSR     @AXLON1         ; TURN ON ERROR LIGHT
1808 1450       ;
1809 1450 90CE A        LD      AC0,@AEP2E      ; PLAN 2
1810 1451 1102 A        BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1811 1452 8CEB A        LD      AC3,APP2U
1812 1453 2C56 A        JSR     @AXLON1         ; TURN ON ERROR LIGHT
1813 1454       ;
1814 1454 90CF A        LD      AC0,@AEP3E      ; PLAN 3
1815 1455 1102 A        BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1816 1456 8CEC A        LD      AC3,APP3U
1817 1457 2C56 A        JSR     @AXLON1         ; TURN ON ERROR LIGHT
1818 1458       ;
1819 1458 90D0 A        LD      AC0,@AEPDVE     ; DATA VALIDITY
1820 1459 1103 A        BOC     CCEZ,.+4        ; BRANCH IF NO ERROR
1821 145A 8CE9 A        LD      AC3,APPDU
1822 145B 2C58 A        JSR     @AXLON2         ; TURN ON ERROR LIGHT
1823 145C 21C5 A        JMP     EPANE1          ; DISCONNECT
1824 145D       ;
1825 145D       ;                  ... UPDATE DATA BASE ...
1826 145D 2C44 A        JSR     @AEPUP
1827 145E       ;
1828 145E 8CE9 A        LD      AC3,APPDU
1829 145F 2C57 A        JSR     @AXLOF1         ; ASSURE PENDING INPUT LIGHT IS OFF
1830 1460       ;
1831 1460 0200 A        RTS     D0              ; RETURN FROM EPAN
1832 1461       ;
1833 1461       ;               ... COMPUTE SUM OF INTERVALS IN MASTER PLAN ...
1834 1461
1835 1461       ;                       AC2 = BASE ADDRESS OF MASTER TIMING PLAN
1836 1461       ;
1837 1461       ;                       AC1 RETURNS SUM OF INTERVAL DURATIONS
1838 1461       ;
1839 1461       EPFI:
1840 1461 4D00 A        LI      AC1,C0          ; CLEAR SUM
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1841 1462 8200 A EPFI1:  LD      AC0,D0(AC2)      ; FETCH INTERVAL DURATION
1842 1463 1102 A         BOC     CCEZ,.+3         ; BRANCH IF ZERO
1843 1464 1804 A         BOC     CCZN,EPFIR       ; BRANCH IF NEGATIVE, END OF PLAN
1844 1465 3100 A         RADD    AC0,AC1          ; ADD DURATION TO SUM
1845 1466 4401 A         AISZ    AC2,C1           ; INCREMENT ADDRESS
1846 1467 2100 A         JMP     .+1
1847 1468 21F9 A         JMP     EPFI1            ; CONTINUE LOOP
1848 1469                ;
1849 1469 0200 A EPFIR:  RTS     D0               ; RETURN FROM EPFI
1850 146A                ;
1851 146A                ;                  ... LOCAL DATA ...
1852 146A 00C8 A EPCY:   .WORD   200              ; MAXIMUM CYCLE LENGTH (SECONDS)
1853 146B 00C8 A EPIN1:  .WORD   200              ; LIMIT ON MAXIMUM EXTENSION (SECONDS)
1854 146C 000A A E10:    .WORD   10               ; CONSTANT FOR DIVISION
1855 146D 0064 A E100:   .WORD   100              ; PERCENTAGE CONVERSION CONSTANT
1856 146E                ;
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1859 146E                .LIST   LPP
1860 146E        ;
1861 146E        ;                   ... PROG PANEL MONITOR ROUTINE ...
1862 146E        ;
1863 146E        ;                       (EXECUTED DURING RTC SEQUENCE)
1864 146E        ;
1865 146E      EPPM:
1866 146E 90BB A          LD      AC0,@ABPPD      ; FETCH PROG PANEL DISCRETES
1867 146F 6153 A          AND     AC0,H0400       ; EXTRACT INPUT REQUEST SWITCH STATE
1868 1470 1502 A          BOC     CCNZ,.+3        ; BRANCH IF INPUT REQUEST ON
1869 1471        ;
1870 1471 B0C6 A          ST      AC0,@AEPUF      ; (AC0) = 0, ASSURE UPDATE FLAG RESET
1871 1472 2105 A          JMP     EPPM1
1872 1473        ;
1873 1473 90C8 A          LD      AC0,@AEPIR      ; FETCH PREVIOUS STATE OF INPUT REQ
1874 1474 1503 A          BOC     CCNZ,.+4        ; BRANCH IF SWITCH WAS ON
1875 1475        ;
1876 1475 4CFF A          LI      AC0,CM1
1877 1476 B0C7 A          ST      AC0,@AEPCF      ; SET FLAG FOR INPUT OF THUMBWHEELS
1878 1477 814B A          LD      AC0,H0400       ; RESTORE SWITCH DATUM
1879 1478        ;
1880 1478 B0C8 A EPPM1:   ST      AC0,@AEPIR      ; SAVE STATE OF INPUT REQUEST
1881 1479        ;
1882 1479 90C7 A          LD      AC0,@AEPCF
1883 147A 1147 A          BOC     CCEZ,EPPMR      ; BRANCH IF NOT INPUT PROCESSING SEQ
1884 147B        ;
1885 147B 88C7 A          LD      AC2,AEPCF       ; ADDRESS OF COMPUTATION FLAG
1886 147C        ;
1887 147C 4DFF A          LI      AC1,CM1
1888 147D F600 A          SKNE    AC1,(AC2)       ; SKIP IF NOT THUMBWHEEL INPUT
1889 147E 2101 A          JMP     .+2
1890 147F 210B A          JMP     EPPM2
1891 1480        ;
1892 1480        ;                   ... CLEAR ERROR FLAGS ...
1893 1480 4C00 A          LI      AC0,C0
1894 1481 B0CD A          ST      AC0,@AEP1E      ; PLAN 1
1895 1482 B0CE A          ST      AC0,@AEP2E      ; PLAN 2
1896 1483 B0CF A          ST      AC0,@AEP3E      ; PLAN 3
1897 1484 B0D0 A          ST      AC0,@AEPDVE     ; DATA VALIDITY
1898 1485        ;
1899 1485        ;                   ... TURN OFF ERROR LIGHT ...
1900 1485        ;
1901 1485 8CE9 A          LD      AC3,APPDU       ; DEVICE ADDRESS DATA VALIDITY LIGHT
1902 1486 2C59 A          JSR     @AXLOF2
1903 1487        ;
1904 1487 2C3E A          JSR     @ABPAN          ; INPUT THUMBWHEEL DATA
1905 1488        ;
1906 1488 4D01 A          LI      AC1,C1
1907 1489 B4C7 A          ST      AC1,@AEPCF      ; SET FLAG FOR PLAN 1 PROCESSING
1908 148A 2137 A          JMP     EPPMR
1909 148B        ;
1910 148B 4D01 A EPPM2:   LI      AC1,C1
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1911 148C F600 A         SKNE    AC1,(AC2)       ; SKIP IF NOT PLAN 1 PROCESSING
1912 148D 2101 A         JMP     .+2
1913 148E 210A A         JMP     EPPM3
1914 148F          ;
1915 148F          ;                  ... TURN OFF ERROR LIGHT ...
1916 148F 8CEA A         LD      AC3,APP1U       ; PERIPHERAL DEVICE ADDRESS PLAN 1
1917 1490 2C57 A         JSR     @AXLOF1
1918 1491          ;
1919 1491 2C41 A         JSR     @AEPP1          ; PLAN 1 PROCESSING
1920 1492          ;
1921 1492          ;                  ... TEST ERROR FLAG ...
1922 1492 90CD A         LD      AC0,@AEP1E      ; PLAN 1
1923 1493 1102 A         BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1924 1494 8CEA A         LD      AC3,APP1U
1925 1495 2C56 A         JSR     @AXLON1         ; TURN ON ERROR LIGHT
1926 1496          ;
1927 1496 4D02 A         LI      AC1,C2
1928 1497 B4C7 A         ST      AC1,@AEPCF      ; SET FLAG FOR PLAN 2 PROCESSING
1929 1498 2129 A         JMP     EPPMR
1930 1499          ;
1931 1499 4D02 A EPPM3:  LI      AC1,C2
1932 149A F600 A         SKNE    AC1,(AC2)       ; SKIP IF NOT PLAN 2 PROCESSING
1933 149B 2101 A         JMP     .+2
1934 149C 210A A         JMP     EPPM4
1935 149D          ;
1936 149D          ;                  ... TURN OFF ERROR LIGHT ...
1937 149D          ;
1938 149D 8CEB A         LD      AC3,APP2U       ; PERIPHERAL DEVICE ADDRESS PLAN 2
1939 149E 2C57 A         JSR     @AXLOF1
1940 149F          ;
1941 149F 2C42 A         JSR     @AEPP2          ; PLAN 2 PROCESSING
1942 14A0          ;
1943 14A0          ;                  ... TEST ERROR FLAG ...
1944 14A0 90CE A         LD      AC0,@AEP2E      ; PLAN 2
1945 14A1 1102 A         BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1946 14A2 8CEB A         LD      AC3,APP2U
1947 14A3 2C56 A         JSR     @AXLON1         ; TURN ON ERROR LIGHT
1948 14A4          ;
1949 14A4 4D03 A         LI      AC1,C3
1950 14A5 B4C7 A         ST      AC1,@AEPCF      ; SET FLAG FOR PLAN 3 PROCESSING
1951 14A6 2115 A         JMP     EPPMR
1952 14A7          ;
1953 14A7 4D03 A EPPM4:  LI      AC1,C3
1954 14A8 F600 A         SKNE    AC1,(AC2)       ; SKIP IF NOT PLAN 3 PROCESSING
1955 14A9 2101 A         JMP     .+2
1956 14AA 210A A         JMP     EPPM5
1957 14AB          ;
1958 14AB          ;                  ... TURN OFF ERROR LIGHT ...
1959 14AB 8CEC A         LD      AC3,APP3U       ; PERIPHERAL DEVICE ADDRESS PLAN 3
1960 14AC 2C57 A         JSR     @AXLOF1
1961 14AD          ;
1962 14AD 2C43 A         JSR     @AEPP3          ; PLAN 3 PROCESSING
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1963 14AE          ;
1964 14AE          ;                    ... TEST ERROR FLAG ...
1965 14AE 90CF A           LD      AC0,@AEP3E      ; PLAN 3
1966 14AF 1102 A           BOC     CCEZ,.+3        ; BRANCH IF NO ERROR
1967 14B0 8CEC A           LD      AC3,APP3U
1968 14B1 2C56 A           JSR     @AXLON1         ; TURN ON ERROR LIGHT
1969 14B2          ;
1970 14B2 4D04 A           LI      AC1,C4
1971 14B3 B4C7 A           ST      AC1,@AEPCF      ; SET FLAG FOR COMPLETION OF INPUT PROC
1972 14B4 210D A           JMP     EPPMR
1973 14B5          ;
1974 14B5 4D04 A EPPM5:    LI      AC1,C4
1975 14B6 F600 A           SKNE    AC1,(AC2)       ; SKIP IF NOT COMPLETION OF INPUT PROC
1976 14B7 2101 A           JMP     .+2
1977 14B8 2109 A           JMP     EPPMR
1978 14B9          ;
1979 14B9          ;                    ... TEST ERROR FLAG ...
1980 14B9 90D0 A           LD      AC0,@AEPDVE     ; DATA VALIDITY
1981 14BA 1103 A           BOC     CCEZ,.+4        ; BRANCH IF NO ERROR
1982 14BB 8CE9 A           LD      AC3,APPDU
1983 14BC 2C58 A           JSR     @AXLON2         ; TURN ON ERROR LIGHT
1984 14BD 2102 A           JMP     .+3             ; DATA VALIDITY ERROR, DO NOT UPDATE
1985 14BE          ;
1986 14BE 4D01 A           LI      AC1,C1
1987 14BF B4C6 A           ST      AC1,@AEPUF      ; SET FLAG FOR DATA BASE UPDATE ENABLE
1988 14C0          ;
1989 14C0 4D00 A           LI      AC1,C0
1990 14C1 B4C7 A           ST      AC1,@AEPCF      ; RESET COMPUTE FLAG
1991 14C2          ;
1992 14C2 0200 A EPPMR:    RTS     D0              ; RETURN FROM EPPM
1993 14C3          ;
1994 14C3          ;                    ... LOCAL DATA ...
1995 14C3 0400 A H0400:    .WORD   X'0400          ; BIT 10 SET
1996 14C4          ;
1997 14C4          ;
```

```
2000 14C4                .LIST   LPP
2001 14C4          ;
2002 14C4          ;                    ... PROCESS PROG. PANEL DATA FOR PLAN 1 ...
2003 14C4          EPP1:
2004 14C4          ;
2005 14C4          ;                    ... PROCESS CYCLE LENGTH ...
2006 14C4 88BC A           LD      AC2,ABPD1
2007 14C5 8200 A           LD      AC0,D0(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2008 14C6 2C46 A           JSR     @AEPBI3          ; CONVERTED VALUE RETURNED IN AC1
2009 14C7 212B A           JMP     EPP10            ; DATA VALIDITY ERROR
2010 14C8 8CBF A           LD      AC3,AEPD1
2011 14C9 A700 A           ST      AC1,D0(AC3)      ; SAVE CONVERTED INTEGER VALUE (SECONDS)
2012 14CA 88C9 A           LD      AC2,AEPCY        ; MAXIMUM CYCLE LENGTH TEST (SECONDS)
2013 14CB E600 A           SKG     AC1,D0(AC2)      ; SKIP IF .GT. MAXIMUM
2014 14CC 2107 A           JMP     .+8
2015 14CD          ;
2016 14CD          ;                    ... RECORD CYCLE LENGTH INPUT ERROR ...
2017 14CD 8CD1 A           LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
2018 14CE 2C51 A           JSR     @AERE8           ; AC1 = ERROR DATUM
2019 14CF 4C01 A           LI      AC0,C1
2020 14D0 B0CD A           ST      AC0,@AEP1E       ; SET ERROR FLAG FOR PLAN 1
2021 14D1 94C9 A           LD      AC1,@AEPCY       ; SET CYCLE LENGTH TO MAXIMUM (SECONDS)
2022 14D2 8CBF A           LD      AC3,AEPD1
2023 14D3 A700 A           ST      AC1,D0(AC3)      ; SAVE MAXIMUM CYCLE LENGTH (SECONDS)
2024 14D4          ;
2025 14D4 2C47 A           JSR     @AEM10           ; CONVERT TO 0.1 SECOND UNITS IN AC1
2026 14D5 8CC2 A           LD      AC3,AEPCD1
2027 14D6 A703 A           ST      AC1,D3(AC3)      ; SAVE CYCLE LENGTH (0.1 SEC)
2028 14D7          ;
2029 14D7 88C5 A           LD      AC2,AEDFT        ; MINIMUM CYCLE LENGTH TEST (0.1 SEC)
2030 14D8 8200 A           LD      AC0,D0(AC2)      ; SUM OF FIXED INTERVALS
2031 14D9 5001 A           CAI     AC0,C1           ; NEGATE
2032 14DA 3400 A           PADD    AC1,AC0          ; AC0 = ADJ. TIME IF NON-NEG.
2033 14DB 1302 A           BOC     CCZN,.+3         ; BRANCH IF CYCLE .LE. MINIMUM
2034 14DC A301 A           ST      AC0,D1(AC3)      ; SAVE ADJUSTABLE TIME IN ADJ. INT. 2
2035 14DD 2109 A           JMP     .+10
2036 14DE          ;
2037 14DE          ;                    ... CYCLE LENGTH INPUT ERROR (TOO SHORT) ...
2038 14DE 4C00 A           LI      AC0,C0           ; NO ADJUSTABLE TIME
2039 14DF A301 A           ST      AC0,D1(AC3)      ; SAVE 0 IN ADJUSTABLE INTERVAL 2
2040 14E0          ;
2041 14E0 8200 A           LD      AC0,D0(AC2)      ; RESTORE MIN. SUM OF FIXED INTERVALS
2042 14E1 8CC2 A           LD      AC3,AEPCD1
2043 14E2 A303 A           ST      AC0,D3(AC3)      ; STORE MIN CYCLE (0.1 SEC)
2044 14E3 8CD1 A           LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
2045 14E4 2C51 A           JSR     @AERE8           ; AC1 = ERROR DATUM
2046 14E5 4C01 A           LI      AC0,C1
2047 14E6 B0CD A           ST      AC0,@AEP1E       ; SET ERROR FLAG FOR PLAN 1
2048 14E7          ;
2049 14E7          ;                    ... COMPUTE MAX DWELL TIME FOR SYNCH (24% OF CYCLE) ...
2050 14E7 8CBF A           LD      AC3,AEPD1
2051 14E8 8700 A           LD      AC1,D0(AC3)      ; CYCLE LENGTH (SECONDS)
```

```
2052 14E9 2C48 A          JSR     @AEM24          ; MULTIPLY BY 24
2053 14EA 4C00 A          LI      AC0,C0          ; PREPARE FOR DIVIDE
2054 14EB 88CC A          LD      AC2,AE10        ; *10/100 TO GET 0.1 SEC UNITS
2055 14EC 0690 A          DIV     D0(AC2)
     14ED 0000 A
2056 14EE 8CC2 A          LD      AC3,AEPCD1
2057 14EF A708 A          ST      AC1,D8(AC3)     ; MAX DWELL 24% OF CYCLE (0.1 SEC)
2058 14F0          ;
2059 14F0          ;                    ... COMPUTE START PULSE DURATION (3% OF CYCLE) ...
2060 14F0 5DFD A          SHR     AC1,D3          ; DIVIDE BY 8
2061 14F1 A707 A          ST      AC1,D7(AC3)     ; START PULSE DURATION 3% OF CYCLE
2062 14F2 2105 A          JMP     .+6
2063 14F3          ;
2064 14F3          ;                    ... RECORD CYCLE LENGTH VALIDITY ERROR ...
2065 14F3          EPP10:
2066 14F3 8CD1 A          LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2067 14F4 2C4A A          JSR     @AERE1          ; AC1 = ERROR DATUM
2068 14F5 4C01 A          LI      AC0,C1
2069 14F6 B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2070 14F7 B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2071 14F8          ;
2072 14F8          ;                    ... PROCESS OFFSET 1 ...
2073 14F8 88BC A          LD      AC2,ABPD1
2074 14F9 8201 A          LD      AC0,D1(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2075 14FA 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2076 14FB 2110 A          JMP     EPP11           ; DATA VALIDITY ERROR
2077 14FC 8CBF A          LD      AC3,AEPD1
2078 14FD A701 A          ST      AC1,D1(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2079 14FE E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2080 14FF 2106 A          JMP     .+7
2081 1500          ;
2082 1500          ;                    ... RECORD OFFSET INPUT ERROR ...
2083 1500 8CD1 A          LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2084 1501 2C52 A          JSR     @AERE9          ; AC1 = ERROR DATUM
2085 1502 4C01 A          LI      AC0,C1
2086 1503 B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2087 1504 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2088 1505 2103 A          JMP     .+4
2089 1506          ;
2090 1506          ;                    ... COMPUTE RESET ...
2091 1506 D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2092 1507 5101 A          CAI     AC1,C1          ; NEGATE
2093 1508 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
2094 1509 8CC2 A          LD      AC3,AEPCD1
2095 150A A704 A          ST      AC1,D4(AC3)     ; SAVE RESET (0.1 SECONDS)
2096 150B 2105 A          JMP     .+6
2097 150C          ;
2098 150C          ;                    ... RECORD OFFSET DATA VALIDITY ERROR ...
2099 150C 8CD1 A EPP11:   LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2100 150D 2C4B A          JSR     @AERE2          ; AC1 = ERROR DATUM
2101 150E 4C01 A          LI      AC0,C1
2102 150F B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
```

```
2103 1510 B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2104 1511          ;
2105 1511          ;                  ... PROCESS OFFSET 2 ...
2106 1511 88BC A          LD      AC2,ABPD1
2107 1512 8202 A          LD      AC0,D2(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2108 1513 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2109 1514 2110 A          JMP     EPP12           ; DATA VALIDITY ERROR
2110 1515 8CBF A          LD      AC3,AEPD1
2111 1516 A702 A          ST      AC1,D2(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2112 1517 E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2113 1518 2106 A          JMP     .+7
2114 1519          ;
2115 1519          ;                  ... RECORD OFFSET INPUT ERROR ...
2116 1519 8CD1 A          LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2117 151A 2C53 A          JSR     @AERE10         ; AC1 = ERROR DATUM
2118 151B 4C01 A          LI      AC0,C1
2119 151C B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2120 151D 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2121 151E 2103 A          JMP     .+4
2122 151F          ;
2123 151F          ;                  ... COMPUTE RESET ...
2124 151F D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2125 1520 5101 A          CAI     AC1,C1          ; NEGATE
2126 1521 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
2127 1522 8CC2 A          LD      AC3,AEPCD1
2128 1523 A705 A          ST      AC1,D5(AC3)     ; SAVE RESET (0.1 SECONDS)
2129 1524 2105 A          JMP     .+6
2130 1525          ;
2131 1525          ;                  ... RECORD OFFSET DATA VALIDITY ERROR ...
2132 1525 8CD1 A EPP12:   LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2133 1526 2C4C A          JSR     @AERE3          ; AC1 = ERROR DATUM
2134 1527 4C01 A          LI      AC0,C1
2135 1528 B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2136 1529 B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2137 152A          ;
2138 152A          ;                  ... PROCESS OFFSET 3 ...
2139 152A 88BC A          LD      AC2,ABPD1
2140 152B 8203 A          LD      AC0,D3(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2141 152C 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2142 152D 2110 A          JMP     EPP13           ; DATA VALIDITY ERROR
2143 152E 8CBF A          LD      AC3,AEPD1
2144 152F A703 A          ST      AC1,D3(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2145 1530 E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2146 1531 2106 A          JMP     .+7
2147 1532          ;
2148 1532          ;                  ... RECORD OFFSET INPUT ERROR ...
2149 1532 8CD1 A          LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2150 1533 2C54 A          JSR     @AERE11         ; AC1 = ERROR DATUM
2151 1534 4C01 A          LI      AC0,C1
2152 1535 B0CD A          ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2153 1536 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2154 1537 2103 A          JMP     .+4
```

```
2155 1538          ;
2156 1538          ;                    ... COMPUTE RESET ...
2157 1538 D700 A           SUB     AC1,D0(AC3)      ; OFFSET - CYCLE
2158 1539 5101 A           CAI     AC1,C1           ; NEGATE
2159 153A 2C47 A           JSR     @AEM10           ; MULTIPLY AC1 BY 10
2160 153B 8CC2 A           LD      AC3,AEPCD1
2161 153C A706 A           ST      AC1,D6(AC3)      ; SAVE RESET (0.1 SECONDS)
2162 153D 2105 A           JMP     .+6
2163 153E          ;
2164 153E          ;                    ... RECORD OFFSET DATA VALIDITY ERROR ...
2165 153E 8CD1 A EPP13:    LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
2166 153F 2C4D A           JSR     @AERE4           ; AC1 = ERROR DATUM
2167 1540 4C01 A           LI      AC0,C1
2168 1541 B0CD A           ST      AC0,@AEP1E       ; SET ERROR FLAG FOR PLAN 1
2169 1542 B0D0 A           ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
2170 1543          ;
2171 1543          ;                    ... PROCESS MSG SPLIT % ...
2172 1543 88BC A           LD      AC2,AEPD1
2173 1544 8204 A           LD      AC0,D4(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2174 1545 2C45 A           JSR     @AEPBI2          ; CONVERT DATUM TO INTEGER IN AC1
2175 1546 2114 A           JMP     EPP14            ; DATA VALIDITY ERROR
2176 1547 8CBF A           LD      AC3,AEPD1
2177 1548 A704 A           ST      AC1,D4(AC3)      ; SAVE CONVERTED VALUE (%)
2178 1549          ;
2179 1549 88C2 A           LD      AC2,AEPCD1
2180 154A 8201 A           LD      AC0,D1(AC2)      ; FETCH ADJUSTABLE TIME
2181 154B 1B01 A           BOC     CCZN,.+2         ; TEST FOR POSITIVE
2182 154C 2102 A           JMP     .+3
2183 154D          ;
2184 154D 4D00 A           LI      AC1,C0           ; STORE 0 FOR BOTH ADJ. INTS.
2185 154E 2106 A           JMP     .+7
2186 154F          ;
2187 154F 4C00 A           LI      AC0,C0           ; PREPARE FOR MULTIPLY
2188 1550 0680 A           MPY     D1(AC2)          ; MSG(%) * ADJ. TIME (0.1 SEC)
     1551 0001 A
2189 1552 88CB A           LD      AC2,AE100        ; DIVIDE BY 100
2190 1553 0690 A           DIV     D0(AC2)
     1554 0000 A
2191 1555          ;
2192 1555 88C2 A           LD      AC2,AEPCD1
2193 1556 A600 A           ST      AC1,D0(AC2)      ; STORE ADJ. INTERVAL 1
2194 1557 5101 A           CAI     AC1,C1           ; SUBTRACT ADJ. INT. 1 FROM TOTAL
2195 1558 C601 A           ADD     AC1,D1(AC2)
2196 1559 A601 A           ST      AC1,D1(AC2)      ; STORE ADJ. INT. 2
2197 155A 2105 A           JMP     .+6
2198 155B          ;
2199 155B          ;                    ... RECORD MSG DATA VALIDITY ERROR ...
2200 155B 8CD1 A EPP14:    LD      AC3,AEPEF1       ; BASE ADDRESS OF ERROR BUFFER
2201 155C 2C4E A           JSR     @AERE5           ; AC1 = ERROR DATUM
2202 155D 4C01 A           LI      AC0,C1
2203 155E B0CD A           ST      AC0,@AEP1E       ; SET ERROR FLAG FOR PLAN 1
2204 155F B0D0 A           ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
```

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2205 1560          ;
2206 1560          ;                    ... PROCESS INT1 ...
2207 1560 88BC A           LD      AC2,ABPD1
2208 1561 8205 A           LD      AC0,D5(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2209 1562 2C46 A           JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2210 1563 210E A           JMP     EPP15           ; DATA VALIDITY ERROR
2211 1564 8C8F A           LD      AC3,AEPD1
2212 1565 A705 A           ST      AC1,D5(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2213 1566 88CA A           LD      AC2,AEPIN1
2214 1567 E600 A           SKG     AC1,D0(AC2)     ; SKIP IF INT1 .GT. LIMIT
2215 1568 2105 A           JMP     .+6
2216 1569          ;
2217 1569          ;                    ... RECORD INT1 INPUT ERROR ...
2218 1569 8CD1 A           LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2219 156A 2C55 A           JSR     @AERE12         ; AC1 = ERROR DATUM
2220 156B 4C01 A           LI      AC0,C1
2221 156C B0CD A           ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2222 156D 94CA A           LD      AC1,@AEPIN1     ; SET MAXIMUM EXTENSION TO LIMIT (SEC)
2223 156E          ;
2224 156E 2C47 A           JSR     @AEM10          ; MULTIPLY AC1 BY 10
2225 156F 8CC2 A           LD      AC3,AEPCD1
2226 1570 A702 A           ST      AC1,D2(AC3)     ; STORE MAXIMUM EXTENSION (0.1 SEC)
2227 1571 2105 A           JMP     .+6
2228 1572          ;
2229 1572          ;                    ... RECORD INT1 DATA VALIDITY ERROR ...
2230 1572 8CD1 A EPP15:    LD      AC3,AEPEF1      ; BASE ADDRESS OF ERROR BUFFER
2231 1573 2C4F A           JSR     @AERE6          ; AC1 = ERROR DATUM
2232 1574 4C01 A           LI      AC0,C1
2233 1575 B0CD A           ST      AC0,@AEP1E      ; SET ERROR FLAG FOR PLAN 1
2234 1576 B0D0 A           ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2235 1577          ;
2236 1577 0200 A           RTS     D0              ; RETURN FROM EPP1
2237 1578          ;
```

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2240 1578                .LIST   LPP
2241 1578        ;
2242 1578        ;                  ... PROCESS PROG. PANEL DATA FOR PLAN 2 ...
2243 1578        EPP2:
2244 1578        ;
2245 1578        ;                  ... PROCESS CYCLE LENGTH ...
2246 1578 88BD A         LD      AC2,ABPD2
2247 1579 8200 A         LD      AC0,D0(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2248 157A 2C46 A         JSR     @AEPBI3         ; CONVERTED VALUE RETURNED IN AC1
2249 157B 212B A         JMP     EPP20           ; DATA VALIDITY ERROR
2250 157C 8CC0 A         LD      AC3,AEPD2
2251 157D A700 A         ST      AC1,D0(AC3)     ; SAVE CONVERTED INTEGER VALUE (SECONDS)
2252 157E 88C9 A         LD      AC2,AEPCY       ; MAXIMUM CYCLE LENGTH TEST (SECONDS)
2253 157F E600 A         SKG     AC1,D0(AC2)     ; SKIP IF .GT. MAXIMUM
2254 1580 2107 A         JMP     .+8
2255 1581        ;
2256 1581        ;                  ... RECORD CYCLE LENGTH INPUT ERROR ...
2257 1581 8CD2 A         LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2258 1582 2C51 A         JSR     @AERE8          ; AC1 = ERROR DATUM
2259 1583 4C01 A         LI      AC0,C1
2260 1584 B0CE A         ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2261 1585 94C9 A         LD      AC1,@AEPCY      ; SET CYCLE LENGTH TO MAXIMUM (SECONDS)
2262 1586 8CC0 A         LD      AC3,AEPD2
2263 1587 A700 A         ST      AC1,D0(AC3)     ; SAVE MAXIMUM CYCLE LENGTH (SECONDS)
2264 1588        ;
2265 1588 2C47 A         JSR     @AEM10          ; CONVERT TO 0.1 SECOND UNITS IN AC1
2266 1589 8CC3 A         LD      AC3,AEPCD2
2267 158A A703 A         ST      AC1,D3(AC3)     ; SAVE CYCLE LENGTH (0.1 SEC)
2268 158B        ;
2269 158C 88C5 A         LD      AC2,AEPFT       ; MINIMUM CYCLE LENGTH TEST (0.1 SEC)
2270 158C 8201 A         LD      AC0,D1(AC2)     ; SUM OF FIXED INTERVALS
2271 158D 5001 A         CAI     AC0,C1          ; NEGATE
2272 158E 3400 A         RADD    AC1,AC0         ; AC0 = ADJ. TIME IF NON-NEG.
2273 158F 1B02 A         BOC     CCZN,.+3        ; BRANCH IF CYCLE .LE. MINIMUM
2274 1590 A301 A         ST      AC0,D1(AC3)     ; SAVE ADJUSTABLE TIME IN ADJ. INT. 2
2275 1591 2109 A         JMP     .+10
2276 1592        ;
2277 1592        ;                  ... CYCLE LENGTH INPUT ERROR (TOO SHORT) ...
2278 1592 4C00 A         LI      AC0,C0          ; NO ADJUSTABLE TIME
2279 1593 A301 A         ST      AC0,D1(AC3)     ; SAVE 0 IN ADJUSTABLE INTERVAL 2
2280 1594        ;
2281 1594 8200 A         LD      AC0,D0(AC2)     ; RESTORE MIN. SUM OF FIXED INTERVALS
2282 1595 8CC3 A         LD      AC3,AEPCD2
2283 1596 A303 A         ST      AC0,D3(AC3)     ; STORE MIN CYCLE (0.1 SEC)
2284 1597 8CD2 A         LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2285 1598 2C51 A         JSR     @AERE8          ; AC1 = ERROR DATUM
2286 1599 4C01 A         LI      AC0,C1
2287 159A B0CE A         ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2288 159B        ;
2289 159B        ;                  ... COMPUTE MAX DWELL TIME FOR SYNCH (24% OF CYCLE) ...
2290 159B 8CC0 A         LD      AC3,AEPD2
2291 159C 8700 A         LD      AC1,D0(AC3)     ; CYCLE LENGTH (SECONDS)
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 2292 159D 2C48 A          JSR     @AEM24          ; MULTIPLY BY 24
 2293 159E 4C00 A          LI      AC0,C0          ; PREPARE FOR DIVIDE
 2294 159F 8ECC A          LD      AC2,AE10        ; *10/100 TO GET 0.1 SEC UNITS
 2295 15A0 0690 A          DIV     D0(AC2)
      15A1 0000 A
 2296 15A2 8CC3 A          LD      AC3,AEPCD2
 2297 15A3 A708 A          ST      AC1,D8(AC3)     ; MAX DWELL 24% OF CYCLE (0.1 SEC)
 2298 15A4                 ;
 2299 15A4                 ;                       ... COMPUTE START PULSE DURATION (3% OF CYCLE) ...
 2300 15A4 50FD A          SHR     AC1,D3          ; DIVIDE BY 8
 2301 15A5 A707 A          ST      AC1,D7(AC3)     ; START PULSE DURATION 3% OF CYCLE
 2302 15A6 2105 A          JMP     .+6
 2303 15A7                 ;
 2304 15A7                 ;                       ... RECORD CYCLE LENGTH VALIDITY ERROR ...
 2305 15A7                 EPP20:
 2306 15A7 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
 2307 15A8 2C4A A          JSR     @AERE1          ; AC1 = ERROR DATUM
 2308 15A9 4C01 A          LI      AC0,C1
 2309 15AA B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
 2310 15AB B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
 2311 15AC                 ;
 2312 15AC                 ;                       ... PROCESS OFFSET 1 ...
 2313 15AC 88BD A          LD      AC2,AEPD2
 2314 15AD 8201 A          LD      AC0,D1(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
 2315 15AE 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
 2316 15AF 2110 A          JMP     EPP21           ; DATA VALIDITY ERROR
 2317 15B0 8CC0 A          LD      AC3,AEPD2
 2318 15B1 A701 A          ST      AC1,D1(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
 2319 15B2 E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
 2320 15B3 2106 A          JMP     .+7
 2321 15B4                 ;
 2322 15B4                 ;                       ... RECORD OFFSET INPUT ERROR ...
 2323 15B4 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
 2324 15B5 2C52 A          JSR     @AERE9          ; AC1 = ERROR DATUM
 2325 15B6 4C01 A          LI      AC0,C1
 2326 15B7 B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
 2327 15B8 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
 2328 15B9 2103 A          JMP     .+4
 2329 15BA                 ;
 2330 15BA                 ;                       ... COMPUTE RESET ...
 2331 15BA D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
 2332 15BB 5101 A          CAI     AC1,C1          ; NEGATE
 2333 15BC 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
 2334 15BD 8CC3 A          LD      AC3,AEPCD2
 2335 15BE A704 A          ST      AC1,D4(AC3)     ; SAVE RESET (0.1 SECONDS)
 2336 15BF 2105 A          JMP     .+6
 2337 15C0                 ;
 2338 15C0                 ;                       ... RECORD OFFSET DATA VALIDITY ERROR ...
 2339 15C0 8CD2 A EPP21:   LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
 2340 15C1 2C4B A          JSR     @AERE2          ; AC1 = ERROR DATUM
 2341 15C2 4C01 A          LI      AC0,C1
 2342 15C3 B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
```

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2343 15C4 B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2344 15C5          ;
2345 15C5          ;                  ... PROCESS OFFSET 2 ...
2346 15C5 88BD A          LD      AC2,ABPD2
2347 15C6 8202 A          LD      AC0,D2(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2348 15C7 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2349 15C8 2110 A          JMP     EPP22           ; DATA VALIDITY ERROR
2350 15C9 8CC0 A          LD      AC3,AEPD2
2351 15CA A702 A          ST      AC1,D2(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2352 15CB E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2353 15CC 2106 A          JMP     .+7
2354 15CD          ;
2355 15CD          ;                  ... RECORD OFFSET INPUT ERROR ...
2356 15CD 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2357 15CE 2C53 A          JSR     @AERE10         ; AC1 = ERROR DATUM
2358 15CF 4C01 A          LI      AC0,C1
2359 15D0 B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2360 15D1 40F6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2361 15D2 2103 A          JMP     .+4
2362 15D3          ;
2363 15D3          ;                  ... COMPUTE RESET ...
2364 15D3 D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2365 15D4 5101 A          CAI     AC1,C1          ; NEGATE
2366 15D5 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
2367 15D6 8CC3 A          LD      AC3,AEPCD2
2368 15D7 A705 A          ST      AC1,D5(AC3)     ; SAVE RESET (0.1 SECONDS)
2369 15D8 2105 A          JMP     .+6
2370 15D9          ;
2371 15D9          ;                  ... RECORD OFFSET DATA VALIDITY ERROR ...
2372 15D9 8CD2 A EPP22:   LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2373 15DA 2C4C A          JSR     @AERE3          ; AC1 = ERROR DATUM
2374 15DB 4C01 A          LI      AC0,C1
2375 15DC B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2376 15DD B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2377 15DE          ;
2378 15DE          ;                  ... PROCESS OFFSET 3 ...
2379 15DE 88BD A          LD      AC2,ABPD2
2380 15DF 8203 A          LD      AC0,D3(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2381 15E0 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2382 15E1 2110 A          JMP     EPP23           ; DATA VALIDITY ERROR
2383 15E2 8CC0 A          LD      AC3,AEPD2
2384 15E3 A703 A          ST      AC1,D3(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2385 15E4 E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2386 15E5 2106 A          JMP     .+7
2387 15E6          ;
2388 15E6          ;                  ... RECORD OFFSET INPUT ERROR ...
2389 15E6 8CD2 A          LD      AC3,AEPEF2      ; BASE ADDRESS OF ERROR BUFFER
2390 15E7 2C54 A          JSR     @AERE11         ; AC1 = ERROR DATUM
2391 15E8 4C01 A          LI      AC0,C1
2392 15E9 B0CE A          ST      AC0,@AEP2E      ; SET ERROR FLAG FOR PLAN 2
2393 15EA 40F6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2394 15EB 2103 A          JMP     .+4
```

```
2395 15EC          ;
2396 15EC          ;                    ... COMPUTE RESET ...
2397 15EC D700 A           SUB     AC1,D0(AC3)      ; OFFSET - CYCLE
2398 15ED 5101 A           CAI     AC1,C1           ; NEGATE
2399 15EE 2C47 A           JSR     @AEM10           ; MULTIPLY AC1 BY 10
2400 15EF 8CC3 A           LD      AC3,AEPCD2
2401 15F0 A706 A           ST      AC1,D6(AC3)      ; SAVE RESET (0.1 SECONDS)
2402 15F1 2105 A           JMP     .+6
2403 15F2          ;
2404 15F2          ;                    ... RECORD OFFSET DATA VALIDITY ERROR ...
2405 15F2 8CD2 A EPP23:    LD      AC3,AEPEF2       ; BASE ADDRESS OF ERROR BUFFER
2406 15F3 2C4D A           JSR     @AERE4           ; AC1 = ERROR DATUM
2407 15F4 4C01 A           LI      AC0,C1
2408 15F5 B0CE A           ST      AC0,@AEP2E       ; SET ERROR FLAG FOR PLAN 2
2409 15F6 B0D0 A           ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
2410 15F7          ;
2411 15F7          ;                    ... PROCESS MSG SPLIT % ...
2412 15F7 88BD A           LD      AC2,AEPD2
2413 15F8 8204 A           LD      AC0,D4(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2414 15F9 2C45 A           JSR     @AEPBI2          ; CONVERT DATUM TO INTEGER IN AC1
2415 15FA 2114 A           JMP     EPP24            ; DATA VALIDITY ERROR
2416 15FB 8CC0 A           LD      AC3,AEPD2
2417 15FC A704 A           ST      AC1,D4(AC3)      ; SAVE CONVERTED VALUE (%)
2418 15FD          ;
2419 15FD 88C3 A           LD      AC2,AEPCD2
2420 15FE 8201 A           LD      AC0,D1(AC2)      ; FETCH ADJUSTABLE TIME
2421 15FF 1001 A           BOC     CCZN,.+2         ; TEST FOR POSITIVE
2422 1600 2102 A           JMP     .+3
2423 1601          ;
2424 1601 4000 A           LI      AC1,C0           ; STORE 0 FOR BOTH ADJ. INTS.
2425 1602 2106 A           JMP     .+7
2426 1603          ;
2427 1603 4C00 A           LI      AC0,C0           ; PREPARE FOR MULTIPLY
2428 1604 0680 A           MPY     D1(AC2)          ; MSG(%) * ADJ. TIME (0.1 SEC)
     1605 0001 A
2429 1606 88CB A           LD      AC2,AE100        ; DIVIDE BY 100
2430 1607 0690 A           DIV     D0(AC2)
     1608 0000 A
2431 1609          ;
2432 1609 88C3 A           LD      AC2,AEPCD2
2433 160A A600 A           ST      AC1,D0(AC2)      ; STORE ADJ. INTERVAL 1
2434 160B 5101 A           CAI     AC1,C1           ; SUBTRACT ADJ. INT. 1 FROM TOTAL
2435 160C C601 A           ADD     AC1,D1(AC2)
2436 160D A601 A           ST      AC1,D1(AC2)      ; STORE ADJ. INT. 2
2437 160E 2105 A           JMP     .+6
2438 160F          ;
2439 160F          ;                    ... RECORD MSG DATA VALIDITY ERROR ...
2440 160F 8CD2 A EPP24:    LD      AC3,AEPEF2       ; BASE ADDRESS OF ERROR BUFFER
2441 1610 2C4E A           JSR     @AERE5           ; AC1 = ERROR DATUM
2442 1611 4C01 A           LI      AC0,C1
2443 1612 B0CE A           ST      AC0,@AEP2E       ; SET ERROR FLAG FOR PLAN 2
2444 1613 B0D0 A           ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
```

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2445 1614          ;
2446 1614          ;                    ... PROCESS INT1 ...
2447 1614 88BD A           LD      AC2,ABPD2
2448 1615 8205 A           LD      AC0,D5(AC2)      ; RAW DATUM, BINARY-CODED DIGITS
2449 1616 2C46 A           JSR     @AEPBI3          ; CONVERT DATUM TO INTEGER IN AC1
2450 1617 210E A           JMP     EPP25            ; DATA VALIDITY ERROR
2451 1618 8CC0 A           LD      AC3,AEPD2
2452 1619 A705 A           ST      AC1,D5(AC3)      ; SAVE CONVERTED VALUE (SECONDS)
2453 161A 88CA A           LD      AC2,AEPIN1
2454 161B E600 A           SKG     AC1,D0(AC2)      ; SKIP IF INT1 .GT. LIMIT
2455 161C 2105 A           JMP     .+6
2456 161D          ;
2457 161D          ;                    ... RECORD INT1 INPUT ERROR ...
2458 161D 8CD2 A           LD      AC3,AEPEF2       ; BASE ADDRESS OF ERROR BUFFER
2459 161E 2C55 A           JSR     @AERE12          ; AC1 = ERROR DATUM
2460 161F 4C01 A           LI      AC0,C1
2461 1620 B0CE A           ST      AC0,@AEP2E       ; SET ERROR FLAG FOR PLAN 2
2462 1621 94CA A           LD      AC1,@AEPIN1      ; SET MAXIMUM EXTENSION TO LIMIT (SEC)
2463 1622          ;
2464 1622 2C47 A           JSR     @AEM10           ; MULTIPLY AC1 BY 10
2465 1623 8CC3 A           LD      AC3,AEPCD2
2466 1624 A702 A           ST      AC1,D2(AC3)      ; STORE MAXIMUM EXTENSION (0.1 SEC)
2467 1625 2105 A           JMP     .+6
2468 1626          ;
2469 1626          ;                    ... RECORD INT1 DATA VALIDITY ERROR ...
2470 1626 8CD2 A EPP25:    LD      AC3,AEPEF2       ; BASE ADDRESS OF ERROR BUFFER
2471 1627 2C4F A           JSR     @AERE6           ; AC1 = ERROR DATUM
2472 1628 4C01 A           LI      AC0,C1
2473 1629 B0CE A           ST      AC0,@AEP2E       ; SET ERROR FLAG FOR PLAN 2
2474 162A B0D0 A           ST      AC0,@AEPDVE      ; SET ERROR FLAG FOR DATA VALIDITY
2475 162B          ;
2476 162B 0200 A           RTS     D0               ; RETURN FROM EPP2
2477 162C          ;
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2480 162C                .LIST   LPP
2481 162C          ;
2482 162C          ;                    ... PROCESS PROG. PANEL DATA FOR PLAN 3 ...
2483 162C          EPP3:
2484 162C          ;
2485 162C          ;                    ... PROCESS CYCLE LENGTH ...
2486 162C 888E A           LD      AC2,ABPD3
2487 162D 8200 A           LD      AC0,D0(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2488 162E 2C46 A           JSR     @AEPBI3         ; CONVERTED VALUE RETURNED IN AC1
2489 162F 212B A           JMP     EPP30           ; DATA VALIDITY ERROR
2490 1630 8CC1 A           LD      AC3,AEPD3
2491 1631 A700 A           ST      AC1,D0(AC3)     ; SAVE CONVERTED INTEGER VALUE (SECONDS)
2492 1632 89C9 A           LD      AC2,AEPCY       ; MAXIMUM CYCLE LENGTH TEST (SECONDS)
2493 1633 E600 A           SKG     AC1,D0(AC2)     ; SKIP IF .GT. MAXIMUM
2494 1634 2107 A           JMP     .+8
2495 1635          ;
2496 1635          ;                    ... RECORD CYCLE LENGTH INPUT ERROR ...
2497 1635 8CD3 A           LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2498 1636 2C51 A           JSR     @AERE8          ; AC1 = ERROR DATUM
2499 1637 4C01 A           LI      AC0,C1
2500 1638 B0CF A           ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2501 1639 94C9 A           LD      AC1,@AEPCY      ; SET CYCLE LENGTH TO MAXIMUM (SECONDS)
2502 163A 8CC1 A           LD      AC3,AEPD3
2503 163B A700 A           ST      AC1,D0(AC3)     ; SAVE MAXIMUM CYCLE LENGTH (SECONDS)
2504 163C          ;
2505 163C 2C47 A           JSR     @AEM10          ; CONVERT TO 0.1 SECOND UNITS IN AC1
2506 163D 8CC4 A           LD      AC3,AEPCD3
2507 163E A703 A           ST      AC1,D3(AC3)     ; SAVE CYCLE LENGTH (0.1 SEC)
2508 163F          ;
2509 163F 88C5 A           LD      AC2,AEPFT       ; MINIMUM CYCLE LENGTH TEST (0.1 SEC)
2510 1640 8202 A           LD      AC0,D2(AC2)     ; SUM OF FIXED INTERVALS
2511 1641 5001 A           CAI     AC0,C1          ; NEGATE
2512 1642 3400 A           RADD    AC1,AC0         ; AC0 = ADJ. TIME IF NON-NEG.
2513 1643 1802 A           BOC     CCZN,.+3        ; BRANCH IF CYCLE .LE. MINIMUM
2514 1644 A301 A           ST      AC0,D1(AC3)     ; SAVE ADJUSTABLE TIME IN ADJ. INT. 2
2515 1645 2109 A           JMP     .+10
2516 1646          ;
2517 1646          ;                    ... CYCLE LENGTH INPUT ERROR (TOO SHORT) ...
2518 1646 4C00 A           LI      AC0,C0          ; NO ADJUSTABLE TIME
2519 1647 A301 A           ST      AC0,D1(AC3)     ; SAVE 0 IN ADJUSTABLE INTERVAL 2
2520 1648          ;
2521 1648 8200 A           LD      AC0,D0(AC2)     ; RESTORE MIN. SUM OF FIXED INTERVALS
2522 1649 8CC4 A           LD      AC3,AEPCD3
2523 164A A303 A           ST      AC0,D3(AC3)     ; STORE MIN CYCLE (0.1 SEC)
2524 164B 8CD3 A           LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2525 164C 2C51 A           JSR     @AERE8          ; AC1 = ERROR DATUM
2526 164D 4C01 A           LI      AC0,C1
2527 164E B0CF A           ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2528 164F          ;
2529 164F          ;                    ... COMPUTE MAX DWELL TIME FOR SYNCH (24% OF CYCLE) ...
2530 164F 8CC1 A           LD      AC3,AEPD3
2531 1650 8700 A           LD      AC1,D0(AC3)     ; CYCLE LENGTH (SECONDS)
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2532 1651 2C48 A          JSR     @AEM24          ; MULTIPLY BY 24
2533 1652 4C00 A          LI      AC0,C0          ; PREPARE FOR DIVIDE
2534 1653 88CC A          LD      AC2,AE10        ; *10/100 TO GET 0.1 SEC UNITS
2535 1654 0690 A          DIV     D0(AC2)
     1655 0000 A
2536 1656 8CC4 A          LD      AC3,AEPCD3
2537 1657 A708 A          ST      AC1,D8(AC3)     ; MAX DWELL 24% OF CYCLE (0.1 SEC)
2538 1658           ;
2539 1658           ;                   ... COMPUTE START PULSE DURATION (3% OF CYCLE) ...
2540 1658 50FD A          SHR     AC1,D3          ; DIVIDE BY 8
2541 1659 A707 A          ST      AC1,D7(AC3)     ; START PULSE DURATION 3% OF CYCLE
2542 165A 2105 A          JMP     .+6
2543 165B           ;
2544 165B           ;                   ... RECORD CYCLE LENGTH VALIDITY ERROR ...
2545 165B           EPP30:
2546 165B 8CD3 A          LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2547 165C 2C4A A          JSR     @AERE1          ; AC1 = ERROR DATUM
2548 165D 4C01 A          LI      AC0,C1
2549 165E B0CF A          ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2550 165F B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2551 1660           ;
2552 1660           ;                   ... PROCESS OFFSET 1 ...
2553 1660 88BE A          LD      AC2,ABPD3
2554 1661 8201 A          LD      AC0,D1(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2555 1662 2C46 A          JSR     @AEPBI3         ; CONVERT DATUM TO INTEGER IN AC1
2556 1663 2110 A          JMP     EPP31           ; DATA VALIDITY ERROR
2557 1664 8CC1 A          LD      AC3,AEPD3
2558 1665 A701 A          ST      AC1,D1(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2559 1666 E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2560 1667 2106 A          JMP     .+7
2561 1668           ;
2562 1668           ;                   ... RECORD OFFSET INPUT ERROR ...
2563 1668 8CD3 A          LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2564 1669 2C52 A          JSR     @AERE9          ; AC1 = ERROR DATUM
2565 166A 4C01 A          LI      AC0,C1
2566 166B B0CF A          ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2567 166C 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2568 166D 2103 A          JMP     .+4
2569 166E           ;
2570 166E           ;                   ... COMPUTE RESET ...
2571 166E D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2572 166F 5101 A          CAI     AC1,C1          ; NEGATE
2573 1670 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
2574 1671 8CC4 A          LD      AC3,AEPCD3
2575 1672 A704 A          ST      AC1,D4(AC3)     ; SAVE RESET (0.1 SECONDS)
2576 1673 2105 A          JMP     .+6
2577 1674           ;
2578 1674           ;                   ... RECORD OFFSET DATA VALIDITY ERROR ...
2579 1674 8CD3 A EPP31:   LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2580 1675 2C4B A          JSR     @AERE2          ; AC1 = ERROR DATUM
2581 1676 4C01 A          LI      AC0,C1
2582 1677 B0CF A          ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
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2583 1678 B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2584 1679          ;
2585 1679          ;                  ... PROCESS OFFSET 2 ...
2586 1679 88BE A          LD      AC2,ABPD3
2587 167A 8202 A          LD      AC0,D2(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2588 167B 2C46 A          JSR     @AEPDI3         ; CONVERT DATUM TO INTEGER IN AC1
2589 167C 2110 A          JMP     EPP32           ; DATA VALIDITY ERROR
2590 167D 8CC1 A          LD      AC3,AEPD3
2591 167E A702 A          ST      AC1,D2(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2592 167F E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2593 1680 2106 A          JMP     .+7
2594 1681          ;
2595 1681          ;                  ... RECORD OFFSET INPUT ERROR ...
2596 1681 8CD3 A          LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2597 1682 2C53 A          JSR     @AERE10         ; AC1 = ERROR DATUM
2598 1683 4C01 A          LI      AC0,C1
2599 1684 B0CF A          ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2600 1685 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2601 1686 2103 A          JMP     .+4
2602 1687          ;
2603 1687          ;                  ... COMPUTE RESET ...
2604 1687 D700 A          SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2605 1688 5101 A          CAI     AC1,C1          ; NEGATE
2606 1689 2C47 A          JSR     @AEM10          ; MULTIPLY AC1 BY 10
2607 168A 8CC4 A          LD      AC3,AEPCD3
2608 168B A705 A          ST      AC1,D5(AC3)     ; SAVE RESET (0.1 SECONDS)
2609 168C 2105 A          JMP     .+6
2610 168D          ;
2611 168D          ;                  ... RECORD OFFSET DATA VALIDITY ERROR ...
2612 168D 8CD3 A EPP32:   LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2613 168E 2C4C A          JSR     @AERE3          ; AC1 = ERROR DATUM
2614 168F 4C01 A          LI      AC0,C1
2615 1690 B0CF A          ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2616 1691 B0D0 A          ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2617 1692          ;
2618 1692          ;                  ... PROCESS OFFSET 3 ...
2619 1692 88BE A          LD      AC2,ABPD3
2620 1693 8203 A          LD      AC0,D3(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2621 1694 2C46 A          JSR     @AEPDI3         ; CONVERT DATUM TO INTEGER IN AC1
2622 1695 2110 A          JMP     EPP33           ; DATA VALIDITY ERROR
2623 1696 8CC1 A          LD      AC3,AEPD3
2624 1697 A703 A          ST      AC1,D3(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2625 1698 E700 A          SKG     AC1,D0(AC3)     ; SKIP IF OFFSET .GT. CYCLE (SECONDS)
2626 1699 2106 A          JMP     .+7
2627 169A          ;
2628 169A          ;                  ... RECORD OFFSET INPUT ERROR ...
2629 169A 8CD3 A          LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2630 169B 2C54 A          JSR     @AERE11         ; AC1 = ERROR DATUM
2631 169C 4C01 A          LI      AC0,C1
2632 169D B0CF A          ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2633 169E 4DF6 A          LI      AC1,CM10        ; SET OUT OF RANGE RESET TO -1 SECOND
2634 169F 2103 A          JMP     .+4
```

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2635 16A0          ;
2636 16A0          ;                    ... COMPUTE RESET ...
2637 16A0 D700 A           SUB     AC1,D0(AC3)     ; OFFSET - CYCLE
2638 16A1 5101 A           CAI     AC1,C1          ; NEGATE
2639 16A2 2C47 A           JSR     @AEM10          ; MULTIPLY AC1 BY 10
2640 16A3 8CC4 A           LD      AC3,AEPCD3
2641 16A4 A706 A           ST      AC1,D6(AC3)     ; SAVE RESET (0.1 SECONDS)
2642 16A5 2105 A           JMP     .+6
2643 16A6          ;
2644 16A6          ;                    ... RECORD OFFSET DATA VALIDITY ERROR ...
2645 16A6 8CD3 A EPP33:    LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2646 16A7 2C4D A           JSR     @AERE4          ; AC1 = ERROR DATUM
2647 16A8 4C01 A           LI      AC0,C1
2648 16A9 BCCF A           ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2649 16AA B0D0 A           ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2650 16AB          ;
2651 16AB          ;                    ... PROCESS MSG SPLIT % ...
2652 16AB 88BE A           LD      AC2,ABPD3
2653 16AC 8204 A           LD      AC0,D4(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2654 16AD 2C45 A           JSR     @AEPBI2         ; CONVERT DATUM TO INTEGER IN AC1
2655 16AE 2114 A           JMP     EPP34           ; DATA VALIDITY ERROR
2656 16AF 8CC1 A           LD      AC3,AEPD3
2657 16B0 A704 A           ST      AC1,D4(AC3)     ; SAVE CONVERTED VALUE (%)
2658 16B1          ;
2659 16B1 88C4 A           LD      AC2,AEPCD3
2660 16B2 8201 A           LD      AC0,D1(AC2)     ; FETCH ADJUSTABLE TIME
2661 16B3 1B01 A           BOC     CCZN,.+2        ; TEST FOR POSITIVE
2662 16B4 2102 A           JMP     .+3
2663 16B5          ;
2664 16B5 4D00 A           LI      AC1,C0          ; STORE 0 FOR BOTH ADJ. INTS.
2665 16B6 2106 A           JMP     .+7
2666 16B7          ;
2667 16B7 4C00 A           LI      AC0,C0          ; PREPARE FOR MULTIPLY
2668 16B8 0680 A           MPY     D1(AC2)         ; MSG(%) * ADJ. TIME (0.1 SEC)
     16B9 0001 A
2669 16BA 88CB A           LD      AC2,AE100       ; DIVIDE BY 100
2670 16BB 0690 A           DIV     D0(AC2)
     16BC 0000 A
2671 16BD          ;
2672 16BD 88C4 A           LD      AC2,AEPCD3
2673 16BE A600 A           ST      AC1,D0(AC2)     ; STORE ADJ. INTERVAL 1
2674 16BF 5101 A           CAI     AC1,C1          ; SUBTRACT ADJ. INT. 1 FROM TOTAL
2675 16C0 C601 A           ADD     AC1,D1(AC2)
2676 16C1 A601 A           ST      AC1,D1(AC2)     ; STORE ADJ. INT. 2
2677 16C2 2105 A           JMP     .+6
2678 16C3          ;
2679 16C3          ;                    ... RECORD MSG DATA VALIDITY ERROR ...
2680 16C3 8CD3 A EPP34:    LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2681 16C4 2C4E A           JSR     @AERE5          ; AC1 = ERROR DATUM
2682 16C5 4C01 A           LI      AC0,C1
2683 16C6 BCCF A           ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2684 16C7 B0D0 A           ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
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2685 16C8          ;
2686 16C8          ;                    ... PROCESS INT1 ...
2687 16C8 88BE A           LD      AC2,A8PD3
2688 16C9 8205 A           LD      AC0,D5(AC2)     ; RAW DATUM, BINARY-CODED DIGITS
2689 16CA 2C46 A           JSR     @AEPB13         ; CONVERT DATUM TO INTEGER IN AC1
2690 16CB 210E A           JMP     EPP35           ; DATA VALIDITY ERROR
2691 16CC 8CC1 A           LD      AC3,AEPD3
2692 16CD A705 A           ST      AC1,D5(AC3)     ; SAVE CONVERTED VALUE (SECONDS)
2693 16CE 88CA A           LD      AC2,AEPIN1
2694 16CF E600 A           SKG     AC1,D0(AC2)     ; SKIP IF INT1 .GT. LIMIT
2695 16D0 2105 A           JMP     .+6
2696 16D1          ;
2697 16D1          ;                    ... RECORD INT1 INPUT ERROR ...
2698 16D1 8CD3 A           LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2699 16D2 2C55 A           JSR     @AERE12         ; AC1 = ERROR DATUM
2700 16D3 4C01 A           LI      AC0,C1
2701 16D4 B0CF A           ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2702 16D5 94CA A           LD      AC1,@AEPIN1     ; SET MAXIMUM EXTENSION TO LIMIT (SEC)
2703 16D6          ;
2704 16D6 2C47 A           JSR     @AEM10          ; MULTIPLY AC1 BY 10
2705 16D7 8CC4 A           LD      AC3,AEPCD3
2706 16D8 A702 A           ST      AC1,D2(AC3)     ; STORE MAXIMUM EXTENSION (0.1 SEC)
2707 16D9 2105 A           JMP     .+6
2708 16DA          ;
2709 16DA          ;                    ... RECORD INT1 DATA VALIDITY ERROR ...
2710 16DA 8CD3 A EPP35:    LD      AC3,AEPEF3      ; BASE ADDRESS OF ERROR BUFFER
2711 16DB 2C4F A           JSR     @AERE6          ; AC1 = ERROR DATUM
2712 16DC 4C01 A           LI      AC0,C1
2713 16DD B0CF A           ST      AC0,@AEP3E      ; SET ERROR FLAG FOR PLAN 3
2714 16DE B0D0 A           ST      AC0,@AEPDVE     ; SET ERROR FLAG FOR DATA VALIDITY
2715 16DF          ;
2716 16DF C200 A           RTS     D0              ; RETURN FROM EPP3
2717 16E0          ;
```

```
2720 16E0                .LIST   LPP
2721 16F0          ;
2722 16F0          ;                    ... UPDATE PROG. PANEL DATA ...
2723 16F0          EPUP:
2724 16F0          ;                    ... UPDATE ADJUSTABLE INTERVALS ...
2725 16E0          ;
2726 16E0          ;                                   DIAL 1
2727 16E0 9893 A           LD      AC2,@ATAI1              ; FIRST ADJUSTABLE INTERVAL
2728 16E1 C88B A           ADD     AC2,ATPM1
2729 16E2 8CC2 A           LD      AC3,AEPCD1
2730 16E3 8700 A           LD      AC1,D0(AC3)
2731 16E4 A600 A           ST      AC1,(AC2)
2732 16E5          ;
2733 16E5 9894 A           LD      AC2,@ATAI2              ; SECOND ADJUSTABLE INTERVAL
2734 16E6 C88B A           ADD     AC2,ATPM1
2735 16E7 8701 A           LD      AC1,D1(AC3)
2736 16E8 A600 A           ST      AC1,(AC2)
2737 16E9          ;                                   DIAL 2
2738 16E9 9893 A           LD      AC2,@ATAI1              ; FIRST ADJUSTABLE INTERVAL
2739 16EA C88C A           ADD     AC2,ATPM2
2740 16EB 8CC3 A           LD      AC3,AEPCD2
2741 16EC 8700 A           LD      AC1,D0(AC3)
2742 16ED A600 A           ST      AC1,(AC2)
2743 16EE          ;
2744 16EE 9894 A           LD      AC2,@ATAI2              ; SECOND ADJUSTABLE INTERVAL
2745 16EF C88C A           ADD     AC2,ATPM2
2746 16F0 8701 A           LD      AC1,D1(AC3)
2747 16F1 A600 A           ST      AC1,(AC2)
2748 16F2          ;                                   DIAL 3
2749 16F2 9893 A           LD      AC2,@ATAI1              ; FIRST ADJUSTABLE INTERVAL
2750 16F3 C88D A           ADD     AC2,ATPM3
2751 16F4 8CC4 A           LD      AC3,AEPCD3
2752 16F5 8700 A           LD      AC1,D0(AC3)
2753 16F6 A600 A           ST      AC1,(AC2)
2754 16F7          ;
2755 16F7 9894 A           LD      AC2,@ATAI2              ; SECOND ADJUSTABLE INTERVAL
2756 16F8 C88D A           ADD     AC2,ATPM3
2757 16F9 8701 A           LD      AC1,D1(AC3)
2758 16FA A600 A           ST      AC1,(AC2)
2759 16FB          ;
2760 16FB          ;                    ... UPDATE MSG SYNCH DWELL PARAMETERS ...
2761 16FB 8C89 A           LD      AC3,ATDWL       ; ADDRESS OF MAX DWELL TIMES
2762 16FC 88C2 A           LD      AC2,AEPCD1      ; ADDRESS OF CONVERTED DATA FOR DIAL 1
2763 16FD 8608 A           LD      AC1,D8(AC2)
2764 16FE A700 A           ST      AC1,D0(AC3)
2765 16FF          ;
2766 16FF 88C3 A           LD      AC2,AEPCD2      ; ADDRESS OF CONVERTED DATA FOR DIAL 2
2767 1700 8608 A           LD      AC1,D8(AC2)
2768 1701 A701 A           ST      AC1,D1(AC3)
2769 1702          ;
2770 1702 88C4 A           LD      AC2,AEPCD3      ; ADDRESS OF CONVERTED DATA FOR DIAL 3
2771 1703 8608 A           LD      AC1,D8(AC2)
```

```
2772 1704 A702 A          ST      AC1,D2(AC3)
2773 1705          ;
2774 1705          ;                  ... UPDATE MAX EXTENSION PREEMPT PARAMETERS ...
2775 1705 88C2 A          LD      AC2,AEPCD1          ; DIAL 1
2776 1706 8602 A          LD      AC1,D2(AC2)
2777 1707 8C76 A          LD      AC3,APEMAX
2778 1708 A701 A          ST      AC1,D1(AC3)
2779 1709          ;
2780 1709 88C3 A          LD      AC2,AEPCD2          ; DIAL 2
2781 170A 8602 A          LD      AC1,D2(AC2)
2782 170B A702 A          ST      AC1,D2(AC3)
2783 170C          ;
2784 170C 88C4 A          LD      AC2,AEPCD3          ; DIAL 3
2785 170D 8602 A          LD      AC1,D2(AC2)
2786 170E A703 A          ST      AC1,D3(AC3)
2787 170F          ;
2788 170F          ;                  ... UPDATE SYNCHRONIZATION PARAMETERS ...
2789 170F 88A1 A          LD      AC2,AESYD
2790 1710 8CC2 A          LD      AC3,AEPCD1          ; DIAL 1
2791 1711 2908 A          JSR     EPUPS
2792 1712          ;
2793 1712 4D06 A          LI      AC1,C6          ; BUFFER LENGTH = 6
2794 1713 3600 A          RADD    AC1,AC2         ; INCREMENT ADDRESS BY BUFFER LENGTH
2795 1714 8CC3 A          LD      AC3,AEPCD2          ; DIAL 2
2796 1715 2904 A          JSR     EPUPS
2797 1716          ;
2798 1716 3600 A          RADD    AC1,AC2         ; INCREMENT ADDRESS BY BUFFER LENGTH
2799 1717 8CC4 A          LD      AC3,AEPCD3          ; DIAL 3
2800 1718 2901 A          JSR     EPUPS
2801 1719          ;
2802 1719 0200 A          RTS     D0              ; RETURN FROM EPUP
2803 171A          ;
2804 171A          ;                                  COPY SYNC DATA ROUTINE
2805 171A 8303 A EPUPS:   LD      AC0,D3(AC3)
2806 171B A200 A          ST      AC0,D0(AC2)     ; CYCLE LENGTH (0.1 SEC UNITS)
2807 171C A205 A          ST      AC0,D5(AC2)     ; SET SYNCH DIAL TIMER TO CYCLE LENGTH
2808 171D          ;
2809 171D 8304 A          LD      AC0,D4(AC3)
2810 171E A201 A          ST      AC0,D1(AC2)     ; RESET 1 (0.1 SEC UNITS)
2811 171F          ;
2812 171F 8305 A          LD      AC0,D5(AC3)
2813 1720 A202 A          ST      AC0,D2(AC2)     ; RESET 2 (0.1 SEC UNITS)
2814 1721          ;
2815 1721 8306 A          LD      AC0,D6(AC3)
2816 1722 A203 A          ST      AC0,D3(AC2)     ; RESET 3 (0.1 SEC UNITS)
2817 1723          ;
2818 1723 8307 A          LD      AC0,D7(AC3)
2819 1724 A204 A          ST      AC0,D4(AC2)     ; START PULSE DURATION (0.1 SEC UNITS)
2820 1725          ;
2821 1725 0200 A          RTS     D0              ; RETURN FROM EPUPS
2822 1726          ;
```

```
2825 1726                .LIST   LPP
2826 1726        ;                  ... CONVERT BINARY CODED DATA TO INTEGER ...
2827 1726        ;               AT ENTRY, AC0 CONTAINS BINARY CODED DIGITS
2828 1726        ;               ENTRY POINT:
2829 1726        ;                           EPBI3 - AC0 HAS 0,N2,N1,N0
2830 1726        ;                           EPBI2 - AC0 HAS 0, 0,N1,N0
2831 1726        ;                           EPBI1 - AC0 HAS 0, 0, 0,N0
2832 1726        ;               INTEGER VALUE RETURNED IN AC1
2833 1726        EPBI:
2834 1726        ;
2835 1726 4E00 A EPBI3:  LI      AC2,C0
2836 1727 3181 A         RCPY    AC0,AC1              ; PROCESS THIRD DIGIT (N2)
2837 1728 651E A         AND     AC1,H0F00            ; EXTRACT THIRD DIGIT N2*256
2838 1729 E520 A         SKG     AC1,H0900        ; TEST FOR VALID DIGIT
2839 172A 2101 A         JMP     .+2
2840 172B 211A A         JMP     EPBIR+1          ; ERROR EXIT
2841 172C 5DFE A         SHR     AC1,D2
2842 172D 3600 A         RADD    AC1,AC2              ; AC2 = AC2 + N2*64
2843 172E 5DFF A         SHR     AC1,D1
2844 172F 3600 A         RADD    AC1,AC2              ; AC2 = AC2 + N2*(64 + 32)
2845 1730 5DFD A         SHR     AC1,D3
2846 1731 3600 A         RADD    AC1,AC2              ; AC2 = AC2 + N2*100
2847 1732 2101 A         JMP     .+2
2848 1733 4E00 A EPBI2:  LI      AC2,C0
2849 1734 3181 A         RCPY    AC0,AC1              ; PROCESS SECOND DIGIT (N1)
2850 1735 6512 A         AND     AC1,H00F0            ; EXTRACT SECOND DIGIT N1*16
2851 1736 E514 A         SKG     AC1,H0090        ; TEST FOR VALID DIGIT
2852 1737 2101 A         JMP     .+2
2853 1738 210D A         JMP     EPBIR+1          ; ERROR EXIT
2854 1739 5DFF A         SHR     AC1,D1
2855 173A 3600 A         RADD    AC1,AC2              ; AC2 = AC2 + N1*8
2856 173B 5DFE A         SHR     AC1,D2
2857 173C 3600 A         RADD    AC1,AC2              ; AC2 = AC2 + N1*10
2858 173D 2101 A         JMP     .+2
2859 173E 4E00 A EPBI1:  LI      AC2,C0
2860 173F 3181 A         RCPY    AC0,AC1              ; PROCESS FIRST DIGIT (N0)
2861 1740 6508 A         AND     AC1,H000F            ; EXTRACT FIRST DIGIT N0*1
2862 1741 E50A A         SKG     AC1,H0009        ; TEST FOR VALID DIGIT
2863 1742 2101 A         JMP     .+2
2864 1743 2102 A         JMP     EPBIR+1          ; ERROR EXIT
2865 1744 3900 A         RADD    AC2,AC1              ; AC1 = AC2 + N0, FINAL INTEGER
2866 1745        ;
2867 1745 0201 A EPBIR:  RTS     D1               ; RETURN FROM EPBI
2868 1746 0200 A         RTS     D0               ; ERROR RETURN FROM EPBI
2869 1747        ;
2870 1747        ;                  ... LOCAL DATA ...
2871 1747 0F00 A H0F00:  .WORD   X'0F00
2872 1748 00F0 A H00F0:  .WORD   X'00F0
2873 1749 000F A H000F:  .WORD   X'000F
2874 174A 0900 A H0900:  .WORD   X'0900           ; MAX VALUE FOR N2*256
2875 174B 0090 A H0090:  .WORD   X'0090           ; MAX VALUE FOR N1*16
2876 174C 0009 A H0009:  .WORD   X'0009           ; MAX VALUE FOR N0*1
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EXECUTIVE CPC - CONVERT BINARY-CODED DATA TO INTEGER

```
2877 174D        ;
```

```
2880 174D                .LIST   LPP
2881 174D          ;
2882 174D          ;
2883 174D          ;
2884 174D          ;                    ... ROUTINES TO MULTIPLY AN INTEGER BY A CONSTANT ...
2885 174D          ;
2886 174D          ;                         UPON ENTRY, AC1 CONTAINS THE INTEGER
2887 174D          ;                                     AC0 USED FOR TEMPORARY STORAGE
2888 174D          ;
2889 174D          ;                         UPON RETURN, AC1 CONTAINS RESULT
2890 174D          ;
2891 174D          ;                    ... MULTIPLY BY 10 ...
2892 174D          EM10:
2893 174D 5D01 A           SHL     AC1,D1          ; INTEGER*2
2894 174E 3481 A           RCPY    AC1,AC0         ; SAVE
2895 174F 5D02 A           SHL     AC1,D2          ; INTEGER*8
2896 1750 3100 A           RADD    AC0,AC1         ; INTEGER*10
2897 1751 0200 A           RTS     D0              ; RETURN FROM EM10
2898 1752          ;
2899 1752          ;                    ... MULTIPLY BY 24 ...
2900 1752          EM24:
2901 1752 5D03 A           SHL     AC1,D3          ; INTEGER*8
2902 1753 3481 A           RCPY    AC1,AC0         ; SAVE
2903 1754 5D01 A           SHL     AC1,D1          ; INTEGER*16
2904 1755 3100 A           RADD    AC0,AC1         ; INTEGER*24
2905 1756 0200 A           RTS     D0              ; RETURN FROM EM24
```

```
2906 1757                .PAGE
2907 1757                .ASECT
2908 1757 1800 A         .=X'1800
2909 1800        ;
```

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2912 1800                .LIST   LTP
2913 1800        ;*****************************************************************************
2914 1800        ;
2915 1800        TPEX:
2916 1800 2100 A         JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
2917 1801 9484 A         LD      AC1,@ATIN               ; AC1=CURRENT INTERVAL INDEX
2918 1802 8892 A         LD      AC2,ATHI                ;  AC2=LOC OF THI
2919 1803 F600 A         SKNE    AC1,(AC2)               ;SKIP IF NOT TRANSFER/HOLD INTERVAL
2920 1804 2101 A         JMP     .+2
2921 1805 2108 A         JMP     TMSG
2922 1806 9C69 A         LD      AC0,@ABDIN              ; AC0 = BDIN
2923 1807 075E A         SKBIT   D14                     ; SKIP IF TRANSFER HOLD
2924 1808 2105 A         JMP     TMSG
2925 1809 8C97 A         LD      AC3,ATCIW               ; AC3=LOC OF COMMAND INDEX WORD TABLE
2926 180A CE00 A         ADD     AC3,(AC2)               ; AC3=LOC OF CIW FOR T/H INTERVAL
2927 180B 8300 A         LD      AC0,(AC3)               ; AC0=CIW FOR T/H INTERVAL
2928 180C B082 A         ST      AC0,@ATCIWC             ; TCIWC=AC0
2929 180D 0200 A         RTS     D0              ; RETURN FROM TPEX (WAIT MODE)
2930 180E F51E A TMSG:   SKNE    AC1,T0                  ; SKIP IF NOT MSG
2931 180F 2908 A         JSR     TSST                    ; JUMP TO TP SYNC START ROUTINE
2932 1810 2101 A         JMP     .+2                     ; JUMP OVER RTS FOR TIMING MODE
2933 1811 0200 A         RTS     D0              ; RETURN FROM TPEX (SYNCH DWELL MODE)
2934 1812 9C85 A         LD      AC3,@ATINT              ;  AC2=LOC OF INTERVAL TIMER
2935 1813 DD1A A         SUB     AC3,T1                  ;  DECREMENT INTERVAL TIMER
2936 1814 BC85 A         ST      AC3,@ATINT
2937 1815 ED17 A         SKG     AC3,T0                  ;  SKIP IF INTERVAL NOT DONE
2938 1816 291A A         JSR     TNXT                    ; INITIATE NEXT TP INTERVAL
2939 1817 0200 A         RTS     D0              ; RETURN FROM TPEX (TIMING MODE)
2940 1818        ;
```

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2943 1818                .LIST   LTP
2944 1818        ;*****************************************************************************
2945 1818        ;
2946 1818        TSST:
2947 1818 2100 A         JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
2948 1819 9C86 A         LD      AC3,@ATFST              ;  AC3=VALUE OF WAIT FOR SYNC START FLAG
2949 181A ED12 A         SKG     AC3,T0                  ; SKIP IF WAIT FOR SYNC START FLAG IS SET
2950 181B 210D A         JMP     TRSET
2951 181C 8889 A         LD      AC2,ATDWL               ; BASE ADDRESS FOR DWELL TIME MAXIMUMS
2952 181D 9483 A         LD      AC1,@ATCDS              ; CURRENT DIAL SELECTION
2953 181E 49FF A         AISZ    AC1,CM1                 ; COMPUTE ADDRESS FOR CURRENT DIAL
2954 181F 3600 A         RADD    AC1,AC2                 ; SKIP IF DIAL 1
2955 1820 8F00 A         LD      AC3,(AC2)               ; MAX DWELL TIME
2956 1821        ;
2957 1821        ;
2958 1821 889C A         LD      AC2,AETST               ; AC2=LOC OF DWELL TIMER
2959 1822 FE00 A         SKG     AC3,(AC2)               ; SKIP IF DWELL TIMER < DWELL MAX
2960 1823 2105 A         JMP     TRSET                   ; JUMP TO RESET WAIT FOR SYNC.START FLAG
2961 1824 4C01 A         LI      AC1,C1
2962 1825 889D A         LD      AC2,AEPST               ; AC2=LOC OF START PULSE INDICATOR
2963 1826 4C00 A         LI      AC0,C0
2964 1827 F200 A         SKNE    AC0,(AC2)               ; SKIP IF START PULSE PRESENT
2965 1828 0201 A         RTS     D1              ; RETURN FROM TSST (SYNCH DWELL MODE)
2966 1829 9C86 A TRSET:  LD      AC0,@ATFST
2967 182A 872F A         SETBIT  D15                     ; SET MSG RELEASE BIT
2968 182B 0C86 A         ST      AC0,@ATFST
2969 182C 0200 A         RTS     D0              ; RETURN FROM TSST (TIMING MODE)
2970 182D                                          ;  LOCAL CONSTANTS
2971 182D 0000 A T0:     .WORD   0
2972 182E 0001 A T1:     .WORD   1
2973 182F 0002 A T2:     .WORD   2
2974 1830 0003 A T3:     .WORD   3
2975 1831        ;
```

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2978 1831                .LIST   LTP
2979 1831        ;*****************************************************************************
2980 1831        ;
2981 1831        TNXT:
2982 1831 2100 A         JMP     .+1                     ; JSR @ACOTF CAN BE INSERTED HERE
2983 1832 4D01 A         LI      AC1,C1
2984 1833 8884 A         LD      AC2,ATIN                ; AC2= LOC OF CURRENT INTERVAL INDEX
2985 1834 C600 A         ADD     AC1,(AC2)
2986 1835 B484 A         ST      AC1,@ATIN               ; INCREMENT INTERVAL INDEX(TIN)
2987 1836 4C00 A         LI      AC0,C0
2988 1837 E200 A         SKG     AC0,(AC2)               ; SKIP IF TIN<0
2989 1838 2101 A         JMP     .+2
2990 1839 211F A         JMP     TOL                     ; TIN < 0
2991 183A 8C95 A         LD      AC3,ATIMX               ; AC3=LOC OF MAX VALUE FOR TIN
2992 183B E700 A         SKG     AC1,(AC3)               ; SKIP IF TIN>MAX
2993 183C 2101 A         JMP     .+2
2994 183D 211B A         JMP     TOL                     ; TIN > TIMX
2995 183E 8C8F A         LD      AC3,ATCTP               ; AC3=LOC OF CURRENT TIMING PLAN
2996 183F CF00 A         ADD     AC3,(AC2)               ; AC3=LOC OF CURRENT INTERVAL IN TP
2997 1840 8300 A         LD      AC0,(AC3)               ; AC0=CURRENT INTERVAL LENGTH
2998 1841 1205 A         BOC     CCZP,TGEZ               ; BRANCH IF INTERVAL => ZERO
2999 1842 4D00 A TLZ:    LI      AC1,C0
3000 1843 B484 A         ST      AC1,@ATIN               ; SET INTERVAL INDEX TO 0
3001 1844 2C2C A         JSR     @APEOC                  ; JUMP TO END OF CYCLE ROUTINE
3002 1845 8C8F A         LD      AC3,ATCTP               ; AC3=LOC OF CURRENT TP
3003 1846 8300 A         LD      AC0,(AC3)               ; AC0=LENGTH OF FIRST INTERVAL
3004 1847 150A A TGEZ:   BOC     CCNZ,TGZ                ; BRANCH IF AC0 NON-ZERO
3005 1848 2100 A         JMP     .+1                     ; NO OPERATION
3006 1849 2100 A         JMP     .+1                     ; NO OPERATION
3007 184A 2100 A         JMP     .+1                     ; NO OPERATION
3008 184B 8C92 A TEZ:    LD      AC3,ATHI                ; AC3=LOC OF TRANSFER HOLD INDEX
3009 184C F700 A         SKNE    AC1,(AC3)               ; SKIP IF NOT T H INTERVAL
3010 184D 2101 A         JMP     .+2
3011 184E 21E2 A         JMP     TNXT            ; CURRENT INTERVAL  IS 0 AND NOT TRANSFER
3012 184F                                        ; HOLD--JUMP TO NEXT INTERVAL
3013 184F 9069 A         LD      AC0,@ABDIN              ; AC0=BDIN
3014 1850 075E A         SKBIT   D14                     ; SKIP IF TRANSFER HOLD
3015 1851 21DF A         JMP     TNXT                    ; NO TRANSFER HOLD, SKIP TO NEXT INTERVAL
3016 1852 B085 A TGZ:    ST      AC0,@ATINT              ; INITIALIZE CURRENT INTERVAL TIMER
3017 1853 8897 A         LD      AC2,ATCIW               ; AC2=LOC OF COMMAND INDEX WORD TABLE
3018 1854 9C84 A         LD      AC3,@ATIN               ; AC3=VALUE OF CURRENT INT INDEX
3019 1855 3E00 A         RADD    AC3,AC2                 ; AC2=LOC OF CURRENT COMMAND INDEX WORD
3020 1856 8200 A         LD      AC0,(AC2)               ; AC0=VALUE OF COMMAND INDEX WORD
3021 1857 B082 A         ST      AC0,@ATCIWC             ;TCIWC=VALUE OF COMMAND INDEX WORD
3022 1858 0200 A         RTS     D0              ; RETURN FROM TNXT
3023 1859        TOL:                            ; INTERVAL INDEX OUT OF LIMITS, RECORD ERROR
3024 1859                                        ;     AND DISCONNECT
3025 1859 8890 A         LD      AC2,AERR
3026 185A 9084 A         LD      AC0,@ATIN
3027 185B A204 A         ST      AC0,D4(AC2)             ; STORE ERROR WORD IN ERROR BUFFER
3028 185C 8203 A         LD      AC0,D3(AC2)
3029 185D 4801 A         AISZ    AC0,C1                  ; FETCH ERROR COUNTER AND INCREMENT
```

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3030 185E 2100 A          JMP     .+1
3031 185F A203 A          ST      AC0,D3(AC2)
3032 1860 8200 A          LD      AC0,D0(AC2)
3033 1861 0721 A          SETBIT  D1                      ; SET ERROR FLAG BIT 1
3034 1862 A200 A          ST      AC0,D0(AC2)
3035 1863          ;
3036 1863 2C2F A          JSR     @AEADC                  ; AUTODISCONNECT ROUTINE, NO RETURN
3037 1864          ;
3038 1864 2100 A          JMP     .+1                     ; THIS INST SHOULD NEVER BE REACHED
3039 1865 21FE A          JMP     .-1
3040 1866          ;
```

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3043 1866                .LIST   LTP
3044 1866        ;*****************************************************************************
3045 1866        ;
3046 1866        TNCY:
3047 1866        ;                                        ZERO PREQ AND PTER ENTRY TIMES
3048 1866 4C00 A         LI      AC0,C0
3049 1867 889A A         LD      AC2,ACTST
3050 1868 A200 A         ST      AC0,D0(AC2)
3051 1869 A201 A         ST      AC0,D1(AC2)
3052 186A        ;
3053 186A        ;                                        TEST PREEMPT IN PROGRESS FLAG
3054 186A 906E A         LD      AC0,@APIP               ; ACCESS PREEMPT IN PROGRESS FLAG
3055 186B 1554 A         BOC     CCMZ,TNDC               ; BRANCH IF PREEMPT IN PROGRESS
3056 186C                                                ;    NO DIAL CHANGE PERMITTED
3057 186C        ;
3058 186C        ;                    ... MANUAL OVERRIDE TEST ...
3059 186C 90BB A         LD      AC0,@ABPPD      ; PROG PANEL SWITCHES
3060 186D 075B A         SKBIT   D11             ; SKIP IF MANUAL OVERRIDE IS ON
3061 186E 2101 A         JMP     .+2             ; MANUAL OVERRIDE OFF
3062 186F 2116 A         JMP     TSYNCR
3063 1870        ;
3064 1870        ;                    ... PROG PANEL SYNCHRONIZATION SWITCHES ...
3065 1870 8883 A TSYNC:  LD      AC2,ATCDS       ; ADDRESS OF CURRENT DIAL SELECT DATUM
3066 1871        ;
3067 1871 4D01 A         LI      AC1,C1
3068 1872 F600 A         SKNE    AC1,(AC2)       ; SKIP IF NOT DIAL 1
3069 1873 2101 A         JMP     .+2
3070 1874 2103 A         JMP     TSD2            ; JUMP TO TEST DIAL 2
3071 1875 0751 A         SKBIT   D1              ; SKIP IF SYNCH SWITCH IS ON
3072 1876 210F A         JMP     TSYNCR          ; JUMP TO RESET FLAG
3073 1877 2110 A         JMP     TSYNCE
3074 1878        ;
3075 1878 4D02 A TSD2:   LI      AC1,C2
3076 1879 F600 A         SKNE    AC1,(AC2)       ; SKIP IF NOT DIAL 2
3077 187A 2101 A         JMP     .+2
3078 187B 2103 A         JMP     TSD3            ; JUMP TO TEST DIAL 3
3079 187C 0755 A         SKBIT   D5              ; SKIP IF SYNCH SWITCH IS ON
3080 187D 2108 A         JMP     TSYNCR          ; JUMP TO RESET FLAG
3081 187E 2109 A         JMP     TSYNCE
3082 187F        ;
3083 187F 4D03 A TSD3:   LI      AC1,C3
3084 1880 F600 A         SKNE    AC1,(AC2)       ; SKIP IF NOT DIAL 3
3085 1881 2101 A         JMP     .+2
3086 1882 2105 A         JMP     TSYNCE
3087 1883 0759 A         SKBIT   D9              ; SKIP IF SYNCH SWITCH IS ON
3088 1884 2101 A         JMP     TSYNCR          ; JUMP TO RESET FLAG
3089 1885 2102 A         JMP     TSYNCE
3090 1886        ;
3091 1886 4C00 A TSYNCR: LI      AC0,C0
3092 1887 8086 A         ST      AC0,@ATFST      ; RESET 'WAIT FOR SYNCH START' FLAG
3093 1888        ;
3094 1888        TSYNCE:
```

TIMING PLAN CPC - INITIATE NEXT CYCLE

```
3095 1888 9C6E A          LD      AC0,@APIP       ; FETCH PREEMPT IN PROGRESS FLAG
3096 1889 150C A          BOC     CCNZ,TPUE       ; BRANCH IF FLAG SET
3097 188A 90C6 A          LD      AC0,@AEPUF      ; FETCH PROG PANEL UPDATE FLAG
3098 188B 1501 A          BOC     CCNZ,.+2        ; BRANCH IF UPDATE FLAG IS SET
3099 188C 2109 A          JMP     TPUE
3100 188D          ;
3101 188D 2C44 A          JSR     @AEPUP          ; UPDATE PROG. PANEL DATA
3102 188E          ;
3103 188E 8CE9 A          LD      AC3,APPDU
3104 188F 2C57 A          JSR     @AXLOF1         ; ASSURE PENDING INPUT LIGHT IS OFF
3105 1890 4C00 A          LI      AC0,C0
3106 1891 B0C6 A          ST      AC0,@AEPUF      ; RESET PROG PANEL UPDATE FLAG
3107 1892          ;
3108 1892 4C00 A          LI      AC0,C0
3109 1893 B086 A          ST      AC0,@ATFST      ; RESET 'WAIT FOR SYNCH START' FLAG
3110 1894          ;
3111 1894 9483 A          LD      AC1,@ATCDS      ; TREAT PANEL UPDATE AS A DIAL CHANGE
3112 1895 211E A          JMP     TDCH
3113 1896          TPUE:
3114 1896          ;
3115 1896                                          ; DETERMINE CURRENT DIAL SELECTION
3116 1896 90A4 A TDIAL:   LD      AC0,@AED23
3117 1897 0754 A          SKBIT   D4
3118 1898 2113 A          JMP     TND2                    ; NOT DIAL 2
3119 1899 0755 A          SKBIT   D5
3120 189A 210F A          JMP     TD2                     ; SELECT DIAL 2
3121 189B          ;                                DIAL SELECT ERROR
3122 189B 8890 A          LD      AC2,ATERR               ; IF BOTH BITS 4 AND 5 ARE SET, RECORD
3123 189C                                                 ; ERROR
3124 189C A202 A          ST      AC0,D2(AC2)             ; STORE IN ERROR BUFFER TERRO
3125 189D 9201 A          LD      AC0,D1(AC2)             ; FETCH ERROR COUNTER AND INCREMENT
3126 189E 4901 A          AISZ    AC0,C1
3127 189F 2100 A          JMP     .+1
3128 18A0 A201 A          ST      AC0,D1(AC2)
3129 18A1 8200 A          LD      AC0,D0(AC2)
3130 18A2 0720 A          SETBIT  D0                      ; SET ERROR FLAG BIT 0
3131 18A3 A200 A          ST      AC0,D0(AC2)
3132 18A4 9483 A          LD      AC1,@ATCDS              ; IN CASE OF ERROR, RETAIN CURRENT DIAL
3133 18A5 E588 A          SKG     AC1,T1                  ; SKIP IF NOT DIAL 1
3134 18A6 2109 A          JMP     TD1
3135 18A7 E587 A          SKG     AC1,T2                  ; SKIP IF DIAL 3
3136 18A8 2101 A          JMP     TD2
3137 18A9 2104 A          JMP     TD3
3138 18AA 4D02 A TD2:     LI      AC1,C2                  ; SELECT DIAL 2
3139 18AB 2105 A          JMP     TDSEL
3140 18AC 0755 A TND2:    SKBIT   D5                      ; SKIP IF DIAL 3
3141 18AD 2102 A          JMP     TD1
3142 18AE 4D03 A TD3:     LI      AC1,C3                  ; SELECT DIAL 3
3143 18AF 2101 A          JMP     TDSEL
3144 18B0 4D01 A TD1:     LI      AC1,C1                  ; SELECT DIAL 1
3145 18B1          ;
3146 18B1          TDSEL:
```

TIMING PLAN CPC - INITIATE NEXT CYCLE

```
3147 18B1 8C83 A         LD      AC3,ATCDS          ; AC3=LOC OF CURRENT DIAL SELECTOR
3148 18B2 F700 A         SKNE    AC1,(AC3)          ; SKIP IF NEW DIAL SELECTION
3149 18B3 210C A         JMP     TNDC               ; JUMP NO DIAL CHANGE
3150 18B4          ;                                DIAL CHANGE
3151 18B4 B483 A TDCH:   ST      AC1,@ATCDS         ; CHANGE CURRENT DIAL SELECTOR
3152 18B5 9C83 A         LD      AC3,@ATCDS         ; UPDATED DIAL SELECTION (1, 2, OR 3)
3153 18B6 CC8A A         ADD     AC3,ATPP           ; ADDRESS PRECEDING POINTERS
3154 18B7 8800 A         LD      AC2,D0(AC3)        ; POINTER TO MASTER FOR CURRENT DIAL
3155 18B8 8C8F A         LD      AC3,ATCTP          ; AC3=LOC OF CURRENT TP TABLE
3156 18B9 2C36 A         JSR     @ATCOPY            ; COPY MASTER INTO CURRENT
3157 18BA 9C83 A         LD      AC3,@ATCDS         ; UPDATED DIAL SELECTION (1, 2, OR 3)
3158 18BB CC8A A         ADD     AC3,ATPP           ; ADDRESS PRECEDING POINTERS
3159 18BC 8800 A         LD      AC2,D0(AC3)        ; POINTER TO MASTER FOR CURRENT DIAL
3160 18BD 8C8E A         LD      AC3,ATNTP          ; AC3=LOC OF NEXT TP
3161 18BE 2C36 A         JSR     @ATCOPY            ;COPY MASTER TO NEXT
3162 18BF 0200 A         RTS     D0                 ; RETURN FROM TNCY
3163 18C0          ;
3164 18C0          ;                                NO DIAL CHANGE
3165 18C0 8C8F A TNDC:   LD      AC3,ATCTP
3166 18C1 808E A         LD      AC2,ATNTP
3167 18C2 2C36 A         JSR     @ATCOPY            ; COPY NEXT TP INTO CURRENT TP
3168 18C3 9C83 A         LD      AC3,@ATCDS         ; UPDATED DIAL SELECTION (1, 2, OR 3)
3169 18C4 CC8A A         ADD     AC3,ATPP           ; ADDRESS PRECEDING POINTERS
3170 18C5 8800 A         LD      AC2,D0(AC3)        ; POINTER TO MASTER FOR CURRENT DIAL
3171 18C6 8C8E A         LD      AC3,ATNTP
3172 18C7 2C36 A         JSR     @ATCOPY            ;COPY MASTER TO NEXT
3173 18C8 0200 A         RTS     D0                 ; RETURN FROM TNCY
3174 18C9          ;
```

```
3177 18C9                .LIST   LTP
3178 18C9          ;*************************************************************************
3179 18C9          ;
3180 18C9          ;                                   TCOPY COPIES ONE 20 ELEMENT ARRAY INTO
3181 18C9          ;                                   ANOTHER 20 ELEMENT ARRAY
3182 18C9          ;                                   AC3 PASSES THE LOCATION OF ARRAY TO BE
3183 18C9          ;                                   CHANGED.  AC2 PASSES THE LOCATION OF
3184 18C9          ;                                   THE ARRAY TO BE COPIED
3185 18C9          ;*************************************************************************
3186 18C9 4DEC A TCOPY:  LI      AC1,CM20
3187 18CA 8200 A TLOOP:  LD      AC0,(AC2)              ;VALUE OF THE OLD ARRAY
3188 18CB A300 A         ST      AC0,(AC3)              ; LOC AC3 IN NEW TABLE = AC0
3189 18CC 4901 A         AISZ    AC1,C1
3190 18CD 2101 A         JMP     .+2
3191 18CE 0200 A         RTS     D0              ; RETURN FROM TCOPY
3192 18CF 4A01 A         AISZ    AC2,C1
3193 18D0 4B01 A         AISZ    AC3,C1
3194 18D1 21F8 A         JMP     TLOOP
3195 18D2 0200 A         RTS     D0              ; RETURN FROM TCOPY
3196 18D3          ;
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3199 18D3                .LIST   LTP
3200 18D3          ;
3201 18D3          ;                    ... T I M I N G   P L A N   T A B L E S ...
3202 18D3          ;
3203 18D3          ;                        (ALL DATA IN THIS LOCAL DATA BASE SHALL BE
3204 18D3          ;                         CONSIDERED AS APPLICATION DEPENDENT)
3205 18D3          ;
3206 18D3          ;                        PASSIVE BUS DETECTOR SYSTEM - PBD14C
3207 18D3          ;
3208 18D3          ;       (INTERVAL INDEX PARAMETERS ARE IN TERMS OF DISPLACEMENT FROM
3209 18D3          ;        THE BEGINNING OF THE TIMING PLAN INTERVAL TABLE, 0 - N)
3210 18D3          ;
3211 18D3 0009 A TSCI:   .WORD   9               ; INDEX OF SYNCH CONTRACTIBLE INTERVAL
3212 18D4 000A A THI:    .WORD   10              ; INDEX OF TRANSFER/HOLD INTERVAL
3213 18D5 0005 A TAI1:   .WORD   5               ; INDEX OF ADJ INT 1 (MUST BE IN MSG)
3214 18D6 0009 A TAI2:   .WORD   9               ; INDEX OF ADJ INT 2
3215 18D7 000F A TIMX:   .WORD   15              ; MAXIMUM INTERVAL INDEX
3216 18D8          ;
3217 18D8          ;                    ... PARAMETERS FOR DETECTORIZED APPROACH ...
3218 18D8          ;
3219 18D8          TECI:
3220 18D8          ;
3221 18D8          ;
3222 18D8          ;
3223 18D8 0000 A         .WORD   0               ; NOT USED
3224 18D9 000A A         .WORD   10              ; FIRST INTERVAL IN EXTENSION REQUEST RANGE
3225 18DA 0002 A         .WORD   2               ; EXTENDIBLE INTERVAL INDEX
3226 18DB 003C A         .WORD   60              ; INCREMENTAL EXTENSION TIME
3227 18DC 0005 A         .WORD   5               ; PRIMARY CONTRACTIBLE INTERVAL INDEX
3228 18DD 0009 A         .WORD   9               ; SECONDARY CONTRACTIBLE INTERVAL INDEX
3229 18DE FFFF A         .WORD   -1              ; TERTIARY CONTRACTIBLE INTERVAL INDEX
3230 18DF 0002 A         .WORD   TLEP-TFEP+1     ; NUMBER OF INTERVAL PAIRS TO BE EXCHANGED
3231 18E0          TFEP:
3232 18E0 0002 A         .WORD   X'0002          ; INDICES OF EXCHANGE PAIR 1
3233 18E1 0103 A TLEP:   .WORD   X'0103          ; INDICES OF EXCHANGE PAIR 2
3234 18E2 1918 A         .=.+54
3235 1918          ;
3236 1918          ;                    ... SIGNAL DISPLAY COMMAND INDEX WORDS ...
3237 1918          ;                            (MAXIMUM OF 20 INTERVALS)
3238 1919          ;
3239 1918          ;                        (BITS 15 - 8, MAIN STREET COMMAND INDEX
3240 1918          ;                         BITS 7 - 0, CROSS STREET COMMAND INDEX)
3241 1918          TCIW:
3242 1918 060E A         .WORD   X'060E          ; INTERVAL 1
3243 1919 060E A         .WORD   X'060E          ; INTERVAL 2
3244 191A 0B0E A         .WORD   X'0B0E          ; INTERVAL 1A
3245 191B 0C0E A         .WORD   X'0C0E          ; INTERVAL 2A
3246 191C 060E A         .WORD   X'060E          ; INTERVAL 3B
3247 191D 060E A         .WORD   X'060E          ; INTERVAL 3
3248 191E 070E A         .WORD   X'070E          ; INTERVAL 4
3249 191F 080F A         .WORD   X'080E          ; INTERVAL 5
3250 1920 090F A         .WORD   X'090E          ; INTERVAL 6B
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3251 1921 090E A          .WORD   X'090E          ; INTERVAL 6
3252 1922 0A0E A          .WORD   X'0A0E          ; INTERVAL 7
3253 1923 0D0F A          .WORD   X'0D0F          ; INTERVAL 8
3254 1924 0D10 A          .WORD   X'0D10          ; INTERVAL 9
3255 1925 0D11 A          .WORD   X'0D11          ; INTERVAL 10
3256 1926 0D0E A          .WORD   X'0D0E          ; INTERVAL 11
3257 1927          ;
3258 1927 192C A          .=.+5
3259 192C          ;
3260 192C          ;                    ... SKELETON TIMING PLAN TABLES ...
3261 192C          ;                          ( ADJ INTS = 0)
3262 192C          ;
3263 192C          TPTAB:
3264 192C 0046 A          .WORD   70              ; TPM1
3265 192D 0028 A          .WORD   40
3266 192E 0000 A          .WORD   0
3267 192F 0000 A          .WORD   0
3268 1930 000A A          .WORD   10
3269 1931 0000 A          .WORD   0             ; ADJ INT 1
3270 1932 0078 A          .WORD   120
3271 1933 0028 A          .WORD   40
3272 1934 0046 A          .WORD   70
3273 1935 0000 A          .WORD   0             ; ADJ INT 2
3274 1936 0028 A          .WORD   40
3275 1937 004B A          .WORD   75
3276 1938 0091 A          .WORD   145
3277 1939 0028 A          .WORD   40
3278 193A 000F A          .WORD   15
3279 193B FFFF A          .WORD   -1
3280 193C 1940 A          .=.+4
3281 1940          ;
3282 1940 0046 A          .WORD   70              ; TPM2
3283 1941 0028 A          .WORD   40
3284 1942 0000 A          .WORD   0
3285 1943 0000 A          .WORD   0
3286 1944 000A A          .WORD   10
3287 1945 0000 A          .WORD   0             ; ADJ INT 1
3288 1946 0078 A          .WORD   120
3289 1947 0028 A          .WORD   40
3290 1948 0046 A          .WORD   70
3291 1949 0000 A          .WORD   0             ; ADJ INT 2
3292 194A 0028 A          .WORD   40
3293 194B 004B A          .WORD   75
3294 194C 0091 A          .WORD   145
3295 194D 0028 A          .WORD   40
3296 194E 000F A          .WORD   15
3297 194F FFFF A          .WORD   -1
3298 1950 1954 A          .=.+4
3299 1954          ;
3300 1954 0046 A          .WORD   70              ; TPM3
3301 1955 0028 A          .WORD   40
3302 1956 0000 A          .WORD   0
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3303 1957 0000 A          .WORD   0
3304 1958 000A A          .WORD   10
3305 1959 0000 A          .WORD   0              ; ADJ INT 1
3306 195A 0078 A          .WORD   120
3307 195B 0028 A          .WORD   40
3308 195C 0046 A          .WORD   70
3309 195D 0000 A          .WORD   0              ; ADJ INT 2
3310 195E 0028 A          .WORD   40
3311 195F 004B A          .WORD   75
3312 1960 0091 A          .WORD   145
3313 1961 0028 A          .WORD   40
3314 1962 000F A          .WORD   15
3315 1963 FFFF A          .WORD   -1
3316 1964 1967 A          .=.+3
3317 1967 1968 A TPE:     .=.+1
3318 1968          ; END OF TP TABLES
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3319 1968                .PAGE
3320 1968                .ASECT
3321 1968 1A00 A         .=X'1A00
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3324 1A00                .LIST   LPR
3325 1A00          PMON:
3326 1A00 2100 A         JMP     .+1
3327 1A01          ;                                   DECREMENT RECENT BUS CLASSIFICATION TIMER
3328 1A01 907B A         LD      AC0,@AVCBT
3329 1A02 1103 A         BOC     CCEZ,.+4                    ; BRANCH IF TIMER = 0
3330 1A03 48FF A         AISZ    AC0,CM1                     ; DECREMENT TIMER
3331 1A04 2100 A         JMP     .+1                         ; NO OPERATION
3332 1A05 B07B A         ST      AC0,@AVCBT
3333 1A06          ;                                   SHOULD PIP BE RESET
3334 1A06 9084 A         LD      AC0,@ATIN                   ; AC0 = CURRENT INTERVAL INDEX
3335 1A07 8896 A         LD      AC2,ATECI
3336 1A08 E202 A         SKG     AC0,D2(AC2)                 ; SKIP IF CURRENT INTERVAL IS AFTER
3337 1A09          ;                                          EXTENDED INTERVAL
3338 1A09 2105 A         JMP     PM0
3339 1A0A E201 A         SKG     AC0,D1(AC2)                 ; SKIP IF CURRENT INTERVAL PRIOR
3340 1A0B          ;                                          TO REQUEST RANGE
3341 1A0B F201 A         SKNE    AC0,D1(AC2)
3342 1A0C 2102 A         JMP     PM0
3343 1A0D          ;                                   RESET PIP FLAG
3344 1A0D 4C00 A         LI      AC0,C0
3345 1A0E B06E A         ST      AC0,@APIP
3346 1A0F          PM0:
3347 1A0F          ;                                   CLASSIFY VEHICLE SIGNATURE
3348 1A0F 4C01 A         LI      AC0,C1
3349 1A10          PM01:
3350 1A10 B07E A         ST      AC0,@AVCDT                  ; STORE DETECTOR INDEX
3351 1A11 2C31 A         JSR     @AVCLAS
3352 1A12 1501 A         BOC     CCNZ,.+2                    ; BRANCH IF VEHICLE NON-BUS
3353 1A13 2106 A         JMP     PM02                        ; JUMP TO HANDLE BUS
3354 1A14 907E A         LD      AC0,@AVCDT
3355 1A15 4801 A         AISZ    AC0,C1                      ; INCREMENT DETECTOR INDEX WORD
3356 1A16 2100 A         JMP     .+1                         ; NO OPERATION
3357 1A17 E136 A         SKG     AC0,PMHD                    ; SKIP IF ALL DETECTOR BLOCKS HAVE
3358 1A18          ;                                          BEEN EXAMINED
3359 1A18 21F7 A         JMP     PM01                        ; EXAMINE NEXT DETECTOR BLOCK
3360 1A19 0200 A         RTS     D0                          ; RETURN FROM PMON
3361 1A1A          PM02:
3362 1A1A          ;                                   TEST PROGRAM PANEL BUS PREEMPT SWITCH
3363 1A1A 9C83 A         LD      AC3,@ATCDS                  ; AC3 = DIAL SETTING
3364 1A1B CD2C A         ADD     AC3,PMAS
3365 1A1C 90BB A         LD      AC0,@ABPPD
3366 1A1D 7300 A         SKAZ    AC0,D0(AC3)                 ; SKIP IF SWITCH IS OFF
3367 1A1E 2101 A         JMP     .+2
3368 1A1F 0200 A         RTS     D0                          ; RETURN
3369 1A20          ;                                   BUS PREEMPT SWITCH IS ON
3370 1A20          ;                                   IS CURRENT INTERVAL WITHIN EXTENSION
3371 1A20          ;                                          REQUEST RANGE
3372 1A20 9084 A         LD      AC0,@ATIN
3373 1A21 8896 A         LD      AC2,ATECI
3374 1A22 E201 A         SKG     AC0,D1(AC2)                 ; SKIP IF INTERNAL WITHIN REQUEST RANGE
3375 1A23 F201 A         SKNE    AC0,D1(AC2)                 ; SKIP IF INTERVAL NOT WITHIN
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3376 1A24          ;                                   REQUEST RANGE
3377 1A24 2101 A          JMP     .+2
3378 1A25 212A A          JMP     PM1
3379 1A26          ;                                   IF PREEMPT IN PROGRESS, RETURN.
3380 1A26 906E A          LD      AC0,@APIP                 ; AC0 = PREEMPT IN PROGRESS FLAG
3381 1A27 151F A          BOC     CCNZ,PMRET                ; BRANCH IF PREEMPT IN PROGRESS
3382 1A28          ;                                   SCHEDULE BUS INTERVAL NEXT CYCLE
3383 1A28 8896 A          LD      AC2,ATECI
3384 1A29 8607 A          LD      AC1,D7(AC2)               ; AC1 = NUMBER OF EXCHANGE PAIRS
3385 1A2A 3600 A          RADD    AC1,AC2                   ; AC2 = BASE ADDRESS FOR EXCHANGE
3386 1A2B          PM05:
3387 1A2B 8E07 A          LD      AC3,D7(AC2)               ; AC3 = EXCHANGE PAIR INDEX WORD
3388 1A2C          ;                                   COMPUTE ADDR POINTER TO NON-BUS INTERVAL
3389 1A2C 5FF8 A          SHR     AC3,D8
3390 1A2D 811E A          LD      AC0,PMAS2
3391 1A2E 3383 A          RAND    AC0,AC3
3392 1A2F CC8E A          ADD     AC3,ATNTP
3393 1A30          ;                                   IF DURATION OF THIS INTERVAL IS <= ZERO,
3394 1A30          ;                                   BRANCH TO ERROR HANDLING ROUTINE
3395 1A30 8300 A          LD      AC0,D0(AC3)
3396 1A31 1812 A          BOC     CCZN,PMER10
3397 1A32          ;                                   SET DURATION OF NON-BUS INTERVAL TO ZERO
3398 1A32 B06F A          ST      AC0,@APTEM
3399 1A33 4C00 A          LI      AC0,C0
3400 1A34 A300 A          ST      AC0,D0(AC3)
3401 1A35          ;                                   COMPUTE ADDR POINTER TO BUS INTERVAL
3402 1A35 8E07 A          LD      AC3,D7(AC2)               ; AC3 = EXCHANGE PAIR INDEX WORD
3403 1A36 8115 A          LD      AC0,PMAS2
3404 1A37 3383 A          RAND    AC0,AC3
3405 1A38 CC8E A          ADD     AC3,ATNTP
3406 1A39          ;                                   TRANSFER NON-BUS DURATION TO BUS INTERVAL
3407 1A39 906F A          LD      AC0,@APTEM
3408 1A3A A300 A          ST      AC0,D0(AC3)
3409 1A3B          ;                                   DECREMENT BASE ADDRESS AND EXCHANGE
3410 1A3B          ;                                   PAIR COUNTER
3411 1A3B 4AFF A          AISZ    AC2,CM1                   ; SHOULD NOT SKIP
3412 1A3C 49FF A          AISZ    AC1,CM1                   ; SKIP IF EXCHANGES COMPLETED
3413 1A3D 21ED A          JMP     PM05                      ; JUMP TO CONTINUE EXCHANGES
3414 1A3E          ;                                   SET FLAG FOR THE EXTENDIBLE PREEMPT
3415 1A3E 4C01 A          LI      AC0,C1
3416 1A3F B06E A          ST      AC0,@APIP
3417 1A40 B074 A          ST      AC0,@APFREQ
3418 1A41          ;                                   RESET WAIT FOR SYNCH START FLAG
3419 1A41 4C00 A          LI      AC0,C0
3420 1A42 B086 A          ST      AC0,@ATFST
3421 1A43 0200 A          RTS     D0                        ; RETURN FROM PMON
3422 1A44 3981 A PMER10:  RCPY    AC2,AC1                   ; SAVE ADDR OF ZEROED INTERVAL
3423 1A45 8C77 A          LD      AC3,APERR
3424 1A46 2C52 A          JSR     @AERE9                    ; JUMP TO ERROR HANDLING ROUTINE
3425 1A47 0200 A PMRET:   RTS     D0                        ; RETURN
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3426 1A48                    .PAGE 'LOCAL DATA'
3427 1A48 1A48 A PMAS:       .WORD   PMAS
3428 1A49 0001 A             .WORD   X'0001                  ; LOCAL DATA
3429 1A4A 0010 A             .WORD   X'0010
3430 1A4B 0100 A             .WORD   X'0100
3431 1A4C 00FF A PMAS2:      .WORD   X'00FF
3432 1A4D FFFF A PMM1:       .WORD   -1
3433 1A4E 0001 A PMHD:       .WORD   DETS
3434 1A4F 1A98 A APSWCH:     .WORD   PSWCH
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                        .PAGE 'PREEMPT MONITOR - CONTINUED'
1A50 F202 A PM1:    SKNE    AC0,D2(AC2)         ; SKIP IF CURRENT INTERVAL INDEX NOT =
1A51                                            ; EI INDEX
1A51 2101 A         JMP     PM2                 ; JUMP TO EXTEND EI INTERVAL
1A52 0200 A         RTS     D0                  ; RETURN
1A53        PM2:
1A53        ;                                   DETERMINE PEMAX FOR CURRENT DIAL SETTING
1A53 9C83 A         LD      AC3,@ATCDS          ; AC3 = CURRENT DIAL SETTING
1A54 CC76 A         ADD     AC3,APEMAX          ; AC3 = ADDR POINTER TO VALUE OF E(MAX)
1A55        ;                                     FOR CURRENT DIAL SETTING
1A55 8300 A         LD      AC0,D0(AC3)         ; AC0 = E(MAX) FOR CURRENT DIAL SETTING
1A56 B076 A         ST      AC0,@APEMAX
1A57        ;                                   DETERMINE DELTA E FOR THIS EXTENSION ATTEMPT
1A57 8C8F A         LD      AC3,ATCTP
1A58 CE02 A         ADD     AC3,D2(AC2)         ; AC3 POINTS AT EI
1A59 8300 A         LD      AC0,D0(AC3)         ; AC0 = CURRENT DURATION OF EI
1A5A C203 A         ADD     AC0,D3(AC2)         ; AC0 = AC0 + STANDARD DELTA E
1A5B 8876 A         LD      AC2,APEMAX
1A5C E200 A         SKG     AC0,D0(AC2)         ; SKIP IF AC0 > PEMAX
1A5D 2106 A         JMP     .+7
1A5E 8200 A         LD      AC0,D0(AC2)         ; AC0 = PEMAX
1A5F 0300 A         SUB     AC0,D0(AC3)         ; AC0 = PEMAX - DURATION OF EI
1A60 8896 A         LD      AC2,ATECI
1A61 1204 A         BOC     CCZP,.+5
1A62 4C00 A         LI      AC0,C0              ; DELTA E = 0
1A63 2102 A         JMP     .+3
1A64 8896 A         LD      AC2,ATECI
1A65 8203 A         LD      AC0,D3(AC2)
1A66 B06F A         ST      AC0,@APTEM          ; SET DELTA E
1A67 8C8F A         LD      AC3,ATCTP
1A68 CE04 A         ADD     AC3,D4(AC2)         ; AC3 POINTS TO CI(P)
1A69 8300 A         LD      AC0,D0(AC3)         ; AC0 = DURATION OF CI(P)
1A6A 886F A         LD      AC2,APTEM
1A6B E200 A         SKG     AC0,D0(AC2)         ; SKIP IF DURATION OF CI(P) > DELTA E
1A6C F200 A         SKNE    AC0,D0(AC2)         ;SKIP IF AC0 NOT = DELTA E
1A6D 211D A         JMP     PM3
1A6E        ;                                   SEEK ADDITIONAL TIME FROM CI(S)
1A6E 4D00 A         LI      AC1,C0              ; SET DURATION OF CI(P) TO ZERO
1A6F A700 A         ST      AC1,D0(AC3)
1A70 8896 A         LD      AC2,ATECI
1A71 8605 A         LD      AC1,D5(AC2)         ; AC1 = INDICE TO SECONDARY CI
1A72 E5DA A         SKG     AC1,PMM1            ; SKIP IF INDICE => ZERO
1A73 211A A         JMP     PM5                 ; NO SECONDARY CI, USE TIME AVAILABLE
1A74 8C8F A         LD      AC3,ATCTP
1A75 CE05 A         ADD     AC3,D5(AC2)         ; AC3 POINTS TO CI(S)
1A76        ;                                   DETERMINE ADDITIONAL TIME NEEDED
1A76 886F A         LD      AC2,APTEM
1A77 D200 A         SUB     AC0,D0(AC2)
1A78 C300 A         ADD     AC0,D0(AC3)
1A79 1212 A         BOC     CCZP,PM4            ; BRANCH IF DELTA E TIME AVAILABLE
1A7A C200 A         ADD     AC0,D0(AC2)
1A7B 4D00 A         LI      AC1,C0              ; SET DURATION OF CI(S) TO ZERO
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3487 1A7C A700 A          ST      AC1,D0(AC3)
3488 1A7D          ;                          SEEK ADDITIONAL TIME FROM CI(T)
3489 1A7D 8896 A          LD      AC2,ATECI
3490 1A7E 8606 A          LD      AC1,D6(AC2)          ; AC1 = INDICE TO TERTIARY CI
3491 1A7F E5CD A          SKG     AC1,PMM1             ; SKIP IF INDICE => THAN ZERO
3492 1A80 210D A          JMP     PM5                  ; NO TERTIARY CI, USE AVAILABLE TIME
3493 1A81 8C8F A          LD      AC3,ATCTP
3494 1A82 CE06 A          ADD     AC3,D6(AC2)          ; AC3 POINTS TO CI(T)
3495 1A83          ;                          DETERMINE ADDITIONAL TIME NEEDED
3496 1A83 886F A          LD      AC2,APTEM
3497 1A84 D200 A          SUB     AC0,D0(AC2)
3498 1A85 C300 A          ADD     AC0,D0(AC3)
3499 1A86 1205 A          BOC     CCZP,PM4             ; BRANCH IF DELTA E TIME AVAILABLE
3500 1A87 C200 A          ADD     AC0,D0(AC2)
3501 1A88 4D00 A          LI      AC1,C0               ; SET DURATION OF CI(T) TO ZERO
3502 1A89 A700 A          ST      AC1,D0(AC3)
3503 1A8A 2103 A          JMP     PM5
3504 1A8B D200 A PM3:     SUB     AC0,D0(AC2)          ; REDUCE CI(P)
3505 1A8C A300 A PM4:     ST      AC0,D0(AC3)
3506 1A8D 906F A          LD      AC0,@APTEM           ; AC0 = DELTA E
3507 1A8E          PM5:
3508 1A8E 8896 A          LD      AC2,ATECI
3509 1A8F 8C8F A          LD      AC3,ATCTP            ; GENERATE POINTER TO EI
3510 1A90 CE02 A          ADD     AC3,D2(AC2)
3511 1A91 3181 A          RCPY    AC0,AC1
3512 1A92 C300 A          ADD     AC0,D0(AC3)          ; EXTEND EI
3513 1A93 A300 A          ST      AC0,D0(AC3)
3514 1A94          ;                          INCREMENT CURRENT INTERVAL TIMER
3515 1A94 8C85 A          LD      AC3,ATINT
3516 1A95 C700 A          ADD     AC1,D0(AC3)
3517 1A96 8485 A          ST      AC1,@ATINT
3518 1A97 0200 A          RTS     D0                   ; RETURN
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3519 1A98                .PAGE 'DETECTOR SWITCH DEBOUNCER'
3520 1A98                .LIST   LPR
3521 1A98          PSWCH:
3522 1A98          ;                                    DEBOUNCE SDU DETECTOR SWITCHES
3523 1A98          ;
3524 1A98          ;                                    CHECKOUT ROUTINE FOR INTERFACE
3525 1A98          ;                                    BETWEEN LAB INTERSECTION MODEL AND
3526 1A98          ;                                    VEHICLE SIGNATURE DATA
3527 1A98          ;
3528 1A98 9068 A           LD      AC0,@ABBUF              ; AC0 = DDTN
3529 1A99 6880 A           LD      AC2,AVCSDB
3530 1A9A          ;                                    DEBOUNCE DOWNSTREAM SWITCH
3531 1A9A 075C A           SKBIT   D12                     ; SKIP IF DOWNSTREAM SWITCH UNACTIVATED
3532 1A9B 2103 A           JMP     .+4
3533 1A9C          ;                                    SWITCH IS UNACTIVATED
3534 1A9C 4000 A           LI      AC1,C0
3535 1A9D A511 A           ST      AC1,PSWFC               ; CLEAR FLAG
3536 1A9E 2105 A           JMP     .+6                     ; CHECK UPSTREAM DETECTOR
3537 1A9F          ;                                    SWITCH IS ACTIVATED
3538 1A9F 4001 A           LI      AC1,C1
3539 1AA0 E50E A           SKG     AC1,PSWFC               ; SKIP IF FLAG IS CLEAR
3540 1AA1 2102 A           JMP     .+3
3541 1AA2 A50C A           ST      AC1,PSWFC               ; SET FLAG
3542 1AA3          ;                                    MODIFY NEXT INSTR TO ACCESS OTHER
3543 1AA3          ;                                    SIGNATURES IN VCSDB
3544 1AA3 A60F A           ST      AC1,D15(AC2)            ; SET FOS STATUS WORD FOR DOWNSTREAM
3545 1AA4          ;                                    DEBOUNCE UPSTREAM SWITCH
3546 1AA4 075D A           SKBIT   D13                     ; SKIP IF UPSTREAM SWITCH UNACTIVATED
3547 1AA5 2103 A           JMP     .+4
3548 1AA6          ;                                    SWITCH IS UNACTIVATED
3549 1AA6 4000 A           LI      AC1,C0
3550 1AA7 A508 A           ST      AC1,PSWFD               ; CLEAR FLAG
3551 1AA8 0200 A           RTS     D0                      ; RETURN TO PMON
3552 1AA9          ;                                    SWITCH IS ACTIVATED
3553 1AA9 4001 A           LI      AC1,C1
3554 1AAA E505 A           SKG     AC1,PSWFD               ; SKIP IF FLAG IS CLEAR
3555 1AAB 0200 A           RTS     D0
3556 1AAC A503 A           ST      AC1,PSWFD               ; SET FLAG
3557 1AAD          ;                                    MODIFY NEXT INSTR TO ACCESS OTHER
3558 1AAD          ;                                    SIGNATURES IN VCSDB
3559 1AAD A607 A           ST      AC1,D7(AC2)             ; SET FOS STATUS WORD FOR UPSTREAM
3560 1AAE 0200 A           RTS     D0                      ; RETURN
3561 1AAF          ;
3562 1AAF          ;                                    LOCAL DATA
3563 1AAF 0000 A PSWFC:    .WORD   0
3564 1AB0 0000 A PSWFD:    .WORD   0
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3565 1AB1                    .PAGE
3566 1AB1                    .ASECT
3567 1AB1 1C19 A             .=X'1C19
3568 1C19          ;
3569 1C19          ;
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3572 1C19                .LIST   LVC
3573 1C19        VCLAS:
3574 1C19        ;                                VEHICLE CLASSIFICATION
3575 1C19        ;                                MAY 30 1975
3576 1C19        ;
3577 1C19 2100 A         JMP     .+1                  ; JSR @ACOTF MAY BE INSERTED HERE
3578 1C1A 9C7E A         LD      AC3,@AVCDT
3579 1C1B        ;                                IS THE SPECIFIED DETECTOR IN RANGE
3580 1C1B ED66 A         SKG     AC3,VCHD
3581 1C1C ED66 A         SKG     AC3,VCLD
3582 1C1D 2154 A         JMP     VCER1
3583 1C1E        ;                                LOCATE THIS DETECTOR'S PORTION OF SDB
3584 1C1E 4BFF A         AISZ    AC3,CM1
3585 1C1F 2100 A         JMP     .+1
3586 1C20 5F03 A         SHL     AC3,D3
3587 1C21 8980 A         LD      AC2,AVCSDB
3588 1C22 3B00 A         BADD    AC2,AC3
3589 1C23 887F A         LD      AC2,AVCDB
3590 1C24        ;                                CHECK EOS STATUS REGISTER
3591 1C24 8307 A         LD      AC0,D7(AC3)
3592 1C25 1118 A         BOC     CCEZ,VCRET
3593 1C26        ;
3594 1C26        ;                                ALL DATA FROM THE VEHICLE SIGNATURE DATA
3595 1C26        ;                                BASE IS SCALED BO
3596 1C26        ;
3597 1C26        ;                                COPY VEHICLE SIGNATURE DATA BASE
3598 1C26 8305 A         LD      AC0,D5(AC3)
3599 1C27 A205 A         ST      AC0,D5(AC2)
3600 1C28 8300 A         LD      AC0,D0(AC3)
3601 1C29 A200 A         ST      AC0,D0(AC2)
3602 1C2A 8301 A         LD      AC0,D1(AC3)
3603 1C2B A201 A         ST      AC0,D1(AC2)
3604 1C2C 8302 A         LD      AC0,D2(AC3)
3605 1C2D A202 A         ST      AC0,D2(AC2)
3606 1C2E 8303 A         LD      AC0,D3(AC3)
3607 1C2F A203 A         ST      AC0,D3(AC2)
3608 1C30 8304 A         LD      AC0,D4(AC3)
3609 1C31 A204 A         ST      AC0,D4(AC2)
3610 1C32 8306 A         LD      AC0,D6(AC3)
3611 1C33 A206 A         ST      AC0,D6(AC2)
3612 1C34        ;                                RECHECK EOS STATUS REGISTER
3613 1C34 8307 A         LD      AC0,D7(AC3)
3614 1C35        ;                                RESET EOS STATUS REGISTER
3615 1C35 4000 A         LI      AC1,C0
3616 1C36 A707 A         ST      AC1,D7(AC3)
3617 1C37 1508 A         BOC     CCNZ,VC01
3618 1C38 947E A         LD      AC1,@AVCDT
3619 1C39 8C77 A         LD      AC3,APERR
3620 1C3A 2C4F A         JSR     @AERE6
3621 1C3B 8205 A         LD      AC0,D5(AC2)
3622 1C3C 1503 A         BOC     CCNZ,VC01
3623 1C3D 2C50 A         JSR     @AERE7
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3624 1C3E 4C01 A VCRET:  LI      AC0,C1
3625 1C3F 0200 A         RTS     D0                    ; RETURN FROM VCLAS
3626 1C40        ;                              TEST FOR NOISE
3627 1C40 4C20 A VC01:   LI      AC0,32
3628 1C41 E200 A         SKG     AC0,D0(AC2)
3629 1C42 210A A         JMP     VC02
3630 1C43        ;                              TOTAL TIME OF SIGNATURE TOO SHORT FOR VEHICLE
3631 1C43        ;                              SIGNATURE ASSUMED TO BE NOISE
3632 1C43 947E A         LD      AC1,@AVCDT
3633 1C44 8C77 A         LD      AC3,APERR
3634 1C45 2C4E A         JSR     @AERE5
3635 1C46 4C01 A         LI      AC0,C1
3636 1C47 8C7D A         LD      AC3,AVCLOG
3637 1C48 7801 A         ISZ     D1(AC3)
3638 1C49 0200 A         RTS     D0                    ; RETURN FROM VCLAS
3639 1C4A 7800 A         ISZ     D0(AC3)
3640 1C4B 3081 A         NOP
3641 1C4C 0200 A         RTS     D0                    ; RETURN FROM VCLAS
3642 1C4D        ;                              INCREMENT DETECTOR COUNTER
3643 1C4D        VC02:
3644 1C4D 4FFF A         LI      AC3,CM1
3645 1C4E 947E A         LD      AC1,@AVCDT
3646 1C4F 3700 A         RADD    AC1,AC3
3647 1C50 CC7C A         ADD     AC3,AVCVC
3648 1C51 7800 A         ISZ     D0(AC3)
3649 1C52 2100 A         JMP     .+1
3650 1C53        ;                              GROSS TEST
3651 1C53 4C00 A         LI      AC0,C0
3652 1C54 F205 A         SKNE    AC0,D5(AC2)
3653 1C55 2115 A         JMP     VCGTF
3654 1C56        ;                              CHECK MAGNITUDE OF SIGNATURE DATA
3655 1C56 812D A         LD      AC0,VCMA
3656 1C57 7201 A         SKAZ    AC0,D1(AC2)
3657 1C58 211D A         JMP     VCER2
3658 1C59 7203 A         SKAZ    AC0,D3(AC2)
3659 1C5A 2118 A         JMP     VCER2
3660 1C5B 7205 A         SKAZ    AC0,D5(AC2)
3661 1C5C 2119 A         JMP     VCER2
3662 1C5D 8127 A         LD      AC0,VCMT
3663 1C5E 7200 A         SKAZ    AC0,D0(AC2)
3664 1C5F 211A A         JMP     VCER3
3665 1C60 7202 A         SKAZ    AC0,D2(AC2)
3666 1C61 2118 A         JMP     VCER3
3667 1C62 7204 A         SKAZ    AC0,D4(AC2)
3668 1C63 2116 A         JMP     VCER3
3669 1C64 7206 A         SKAZ    AC0,D6(AC2)
3670 1C65 2114 A         JMP     VCER3
3671 1C66        ;                              CHECK FOR TIME OVERFLOW
3672 1C66 811F A         LD      AC0,VCMOF
3673 1C67 6200 A         AND     AC0,D0(AC2)
3674 1C68 F11D A         SKNE    AC0,VCMOF
3675 1C69 2152 A         JMP     VCHFE
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3676 1C6A 2127 A          JMP     VCDHK
3677 1C6B 4C01 A VCGTF:   LI      AC0,C1
3678 1C6C 8C7D A          LD      AC3,AVCLOG
3679 1C6D 7B03 A          ISZ     D3(AC3)
3680 1C6E 0200 A          RTS     D0                    ; RETURN FROM VCLAS
3681 1C6F 7B02 A          ISZ     D2(AC3)
3682 1C70 2100 A          JMP     .+1
3683 1C71 0200 A          RTS     D0                    ; RETURN FROM VCLAS
3684 1C72          VCER1:
3685 1C72          ;                                    DETECTOR SPECIFIED DOES NOT EXIST
3686 1C72 947E A          LD      AC1,@AVCDT
3687 1C73 8C77 A          LD      AC3,APERR
3688 1C74 2C4A A          JSR     @AERE1
3689 1C75 21C8 A          JMP     VCRET
3690 1C76          VCER2:
3691 1C76          ;                                    VEHICLE SIGNATURE DATA EXCEEDS BOUNDS (AMP)
3692 1C76 947E A          LD      AC1,@AVCDT
3693 1C77 8C77 A          LD      AC3,APERR
3694 1C78 2C4B A          JSR     @AERE2
3695 1C79 21C4 A          JMP     VCRET
3696 1C7A          VCER3:
3697 1C7A          ;                                    VEHICLE SIGNATURE DATA EXCEEDS BOUNDS (TIME)
3698 1C7A 947E A          LD      AC1,@AVCDT
3699 1C7B 8C77 A          LD      AC3,APERR
3700 1C7C 2C4C A          JSR     @AERE3
3701 1C7D 21C0 A          JMP     VCRET
3702 1C7E          VCER4:
3703 1C7E          ;                                    VEHICLE TIME DATA OUT OF ORDER
3704 1C7E 8C77 A          LD      AC3,APERR
3705 1C7F 947E A          LD      AC1,@AVCDT
3706 1C80 2C4D A          JSR     @AERE4
3707 1C81 21BC A          JMP     VCRET
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3710 1C82                .LIST   LVC
3711 1C82          ;                          DETECTOR INDEX RANGE
3712 1C82 0001 A VCHD:   .WORD   DETS             ; HIGHEST DETECTOR INDEX NUMBER EXPECTED
3713 1C83 0000 A VCLD:   .WORD   0                ; LOWEST DETECTOR INDEX NUMBER - 1
3714 1C84          ;                          MASKS
3715 1C84 FF00 A VCMA:   .WORD   X'FF00           ; MASK USED IN AMPLITUDE IN RANGE TEST
3716 1C85 F000 A VCMT:   .WORD   X'F000           ; MASK USED IN TIME IN RANGE TEST
3717 1C86 0FFF A VCMOF:  .WORD   X'0FFF           ; MASK USED IN TIME OVERFLOW TEST
3718 1C87          ;                          THE FOLLOWING ARE USED IN VCDHK
3719 1C87 0028 A VCST1:  .WORD   40               ; 2.50 D4      USED IN L2 TEST
3720 1C88 0007 A VCST2:  .WORD   7                ; 0.43 B4      USED IN L1 TEST
3721 1C89 0008 A VCST3:  .WORD   11               ; 0.70 B4      USED IN L1 TEST
3722 1C8A          ;                          THE FOLLOWING ARE USED IN VCHFE
3723 1C8A 2BAE A VC31:   .WORD   11182            ; 2.730 B13    G1 COEFFICIENT FOR H1
3724 1C8B 0E04 A VC32:   .WORD   3588             ; 0.876 B13    G2 COEFFICIENT FOR H1
3725 1C8C 2851 A VC41:   .WORD   10321            ; 2.520 B13    G1 COEFFICIENT FOR H2
3726 1C8D 0239 A VC42:   .WORD   569              ; 0.139 B13    G2 COEFFICIENT FOR H2
3727 1C8E 3EE1 A H1T1:   .WORD   16097            ; 3.93 B13     H1 TEST LOWER BOUND
3728 1C8F 6785 A H1T2:   .WORD   26501            ; 6.47 B13     H1 TEST UPPER BOUND
3729 1C90 3000 A H2T1:   .WORD   12288            ; 3.00 B13     H2 TEST LOWER BOUND
3730 1C91 5000 A H2T2:   .WORD   20480            ; 5.00 B13     H2 TEST UPPER BOUND
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3733 1C92                    .LIST   LVC
3734 1C92          VCDHK:
3735 1C92          ;                                   VEHICLE CLASSIFICATION  MOVING/STOPPED TEST
3736 1C92          ;
3737 1C92          ;                                   INSURE TIME DATA WORDS IN PROPER ORDER
3738 1C92 8204 A           LD      AC0,D4(AC2)
3739 1C93 E202 A           SKG     AC0,D2(AC2)
3740 1C94 21E9 A           JMP     VCER4
3741 1C95 8206 A           LD      AC0,D6(AC2)
3742 1C96 E204 A           SKG     AC0,D4(AC2)
3743 1C97 21E6 A           JMP     VCER4
3744 1C98 8200 A           LD      AC0,D0(AC2)
3745 1C99 E206 A           SKG     AC0,D6(AC2)
3746 1C9A 21E3 A           JMP     VCER4
3747 1C9B          ;                                   FORM T(C1) + T(C4) - T(C3)
3748 1C9B 8200 A           LD      AC0,D0(AC2)             ; AC0 = T(C4)
3749 1C9C D206 A           SUB     AC0,D6(AC2)             ; AC0 = T(C4) - T(C3)
3750 1C9D C202 A           ADD     AC0,D2(AC2)             ; AC0 = T(C4) - T(C3) + T(C1)
3751 1C9E A207 A           ST      AC0,D7(AC2)             ; B0
3752 1C9F          ;                                   FORM F0
3753 1C9F 8607 A           LD      AC1,D2(AC2)             ; B0
3754 1CA0 5D04 A           SHL     AC1,D4                  ; B4
3755 1CA1 4C00 A           LI      AC0,C0
3756 1CA2 C172 A           ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
3757 1CA3 0690 A           DIV     D7(AC2)                 ; B4
     1CA4 0007 A
3758 1CA5 2100 A           JMP     .+1
3759 1CA6          ;                                   CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
3760 1CA6          ;                                   JUMP TO VCHFE
3761 1CA5 074E A           SKSTF   D14
3762 1CA7 2101 A           JMP     .+2
3763 1CA8 2113 A           JMP     VCHFE
3764 1CA9          ;                                   AC1 = T(C1) / T(C1) + T(C4) - T(C3)
3765 1CA9          ;                                   VEHICLE IS CONSIDERED MOVING VEHICLE IF
3766 1CA9          ;                                   0.43 < F0 < 0.7
3767 1CA9 E5DE A           SKG     AC1,VCST2               ; SKIP IF AC1 > 0.43
3768 1CAA 2111 A           JMP     VCHFE
3769 1CAB E5DD A           SKG     AC1,VCST3               ; SKIP IF AC1 > 0.7
3770 1CAC F5DC A           SKNE    AC1,VCST3               ; SKIP IF AC1 NOT = 0.7
3771 1CAD 210E A           JMP     VCHFE                   ; JUMP TO STOPPED VEHICLE CLASSIFIER
3772 1CAE          ;                                   FORM F1 + F2
3773 1CAE 8606 A           LD      AC1,D6(AC2)             ; B0
3774 1CAF D602 A           SUB     AC1,D2(AC2)             ; AC1 = T(C3) - T(C1)
3775 1CB0 5D04 A           SHL     AC1,D4                  ; B4
3776 1CB1 4C00 A           LI      AC0,C0
3777 1CB2 C162 A           ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
3778 1CB3 0690 A           DIV     D7(AC2)                 ; B4
     1CB4 0007 A
3779 1CB5 2100 A           JMP     .+1
3780 1CB6          ;                                   CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
3781 1CB6          ;                                   JUMP TO VCHFE
3782 1CB6 074E A           SKSTF   D14
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3783 1CB7 2101 A        JMP     .+2
3784 1CB8 2103 A        JMP     VCHFE
3785 1CB9       ;                       AC1 = T(C3) - T(C1) / T(C1) + T(C4) - T(C3)
3786 1CB9       ;                       VEHICLE IS CONSIDERED STOPPED VEHICLE IF
3787 1CB9       ;                       F1 + F2 > 2.5
3788 1CB9 E5CD A        SKG     AC1,VCST1       ; SKIP IF AC1 > 2.5
3789 1CBA 2132 A        JMP     VCKFE           ; JUMP TO MOVING VEHICLE CLASSIFIER
3790 1CBB 2100 A        JMP     VCHFE
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3793 1CFC                .LIST   LVC
3794 1CBC          ;                                VEHICLE CLASSIFICATION
3795 1CFC          ;                                STOPPED VEHICLE CLASSIFIER
3796 1CFC        VCHFE:
3797 1CFC 8C7D A         LD      AC3,AVCLOG
3798 1CFD 7B05 A         ISZ     D5(AC3)
3799 1CFE 2102 A         JMP     .+3
3800 1CFF 7B04 A         ISZ     D4(AC3)
3801 1CC0 2100 A         JMP     .+1
3802 1CC1          ;                                INCREMENT STOPPED VEHICLE COUNTER
3803 1CC1          ;                                FORM C31 * A1
3804 1CC1 85C8 A         LD      AC1,VC31                ; B13
3805 1CC2 0680 A         MPY     D3(AC2)
     1CC3 0003 A
3806 1CC4 A208 A         ST      AC0,D8(AC2)
3807 1CC5 A609 A         ST      AC1,D9(AC2)
3808 1CC6          ;                                FORM C32 * A2
3809 1CC6 85C4 A         LD      AC1,VC32                ; B13
3810 1CC7 0680 A         MPY     D5(AC2)
     1CC8 0005 A
3811 1CC9          ;                                FORM (C31*A1 + C32*A2) / A0
3812 1CC9 06A0 A         DADD    D8(AC2)                 ; B13
     1CCA 0008 A
3813 1CCB C149 A         ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
3814 1CCC 0690 A         DIV     D1(AC2)                 ; B13
     1CCD 0001 A
3815 1CCE 2100 A         JMP     .+1
3816 1CCF          ;                                CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
3817 1CCF          ;                                JUMP TO VCNBS
3818 1CCF C74E A         SKSTF   D14
3819 1CD0 2101 A         JMP     .+2
3820 1CD1 2552 A         JMP     @AVCVNB
3821 1CD2          ;                                IF VEHICLE IS NOT A BUS, JUMP TO VCVNB.
3822 1CD2 E5BB A         SKG     AC1,H1T1                ; SKIP IF AC1 > 3.93
3823 1CD3 2550 A         JMP     @AVCVNB
3824 1CD4 E5B4 A         SKG     AC1,H1T2                ; SKIP IF AC1 => 6.47
3825 1CD5 2101 A         JMP     .+2
3826 1CD6 254D A         JMP     @AVCVNB
3827 1CD7          ;                                FORM C41 * A1
3828 1CD7 85B4 A         LD      AC1,VC41                ; B13
3829 1CD8 0680 A         MPY     D3(AC2)
     1CD9 0003 A
3830 1CDA A208 A         ST      AC0,D8(AC2)
3831 1CDB A609 A         ST      AC1,D9(AC2)
3832 1CDC          ;                                FORM C42 * A2
3833 1CDC 85B0 A         LD      AC1,VC42                ; B13
3834 1CDD 0680 A         MPY     D5(AC2)
     1CDE 0005 A
3835 1CDF          ;                                FORM (C41*A1 + C42*A2) / A0
3836 1CDF 06A0 A         DADD    D8(AC2)                 ; B13
     1CE0 0008 A
3837 1CE1 C133 A         ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
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3838 1CE2 0690 A          DIV     D1(AC2)              ; B13
     1CE3 0001 A
3839 1CE4 2100 A          JMP     .+1
384C 1CE5         ;                                  CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
3841 1CE5         ;                                  JUMP TO VCNBS
3842 1CE5 074E A          SKSTF   D14
3843 1CE6 2101 A          JMP     .+2
3844 1CE7 253C A          JMP     @AVCVNB
3845 1CE8         ;                                  IF VEHICLE IS NOT A BUS, JUMP TO VCVNB
3846 1CE8 E5A7 A          SKG     AC1,H2T1             ; SKIP IF AC1 > 3.0
3847 1CE9 253A A          JMP     @AVCVNB
3848 1CEA E5A6 A          SKG     AC1,H2T2             ; SKIP IF AC1 > 5.0
3849 1CEB 2537 A          JMP     @AVCBUS
3850 1CEC 2537 A VCHE:    JMP     @AVCVNB
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1CED                    .LIST   LVC
1CED          ;                                   VEHICLE CLASSIFICATION
1CED          ;                                   MOVING VEHICLE CLASSIFIER
1CED          ;                                       BIT 13 = 1.0
1CED          VCKFE:
1CED 8C7D A             LD      AC3,AVCLOG
1CEE 7B07 A             ISZ     D7(AC3)
1CEF 2102 A             JMP     .+3
1CF0 7B06 A             ISZ     D6(AC3)
1CF1 2100 A             JMP     .+1
1CF2 8D21 A             LD      AC3,VCCP
1CF3 4C00 A             LI      AC0,C0
1CF4 A20C A             ST      AC0,D12(AC2)
1CF5 A20F A             ST      AC0,D15(AC2)
1CF6          VCK:
1CF6          ;                                   FORM C4*A2 = G2'
1CF6 8704 A             LD      AC1,D4(AC3)             ; B13
1CF7 0680 A             MPY     D5(AC2)
1CF8 0005 A
1CF9 A208 A             ST      AC0,D8(AC2)
1CFA A609 A             ST      AC1,D9(AC2)
1CFB          ;                                   FORM C3*A1 = G1'
1CFB 8703 A             LD      AC1,D3(AC3)             ; B13
1CFC 0680 A             MPY     D3(AC2)
1CFD 0003 A
1CFE A20A A             ST      AC0,D10(AC2)
1CFF A60B A             ST      AC1,D11(AC2)
1D00          ;                                   FORM ABS(G1' - G2') / A0
1D00 F208 A             SKNE    AC0,D8(AC2)             ; SKIP IF UPPER G1' NOT = UPPER G2'
1D01 2103 A             JMP     .+4
1D02 E208 A             SKG     AC0,D8(AC2)             ; SKIP IF UPPER G1' > UPPER G2'
1D03 212F A             JMP     VCK3
1D04 2122 A             JMP     VCK21
1D05 651C A             AND     AC1,VCM15
1D06 F51B A             SKNE    AC1,VCM15               ; SKIP IF BIT 15 IS NOT SET
1D07 2108 A             JMP     VCK1
1D08 8519 A             LD      AC1,VCM15
1D09 6609 A             AND     AC1,D9(AC2)
1D0A F517 A             SKNE    AC1,VCM15               ; SKIP IF BIT 15 IS NOT SET
1D0B 2127 A             JMP     VCK3
1D0C 860B A VCK0:       LD      AC1,D11(AC2)
1D0D E609 A             SKG     AC1,D9(AC2)             ; SKIP IF LOWER G1' > LOWER G2'
1D0E 2124 A             JMP     VCK3
1D0F 2116 A             JMP     VCK2
1D10 6609 A VCK1:       AND     AC1,D9(AC2)
1D11 F510 A             SKNE    AC1,VCM15
1D12 21F9 A             JMP     VCK0
1D13 2112 A             JMP     VCK2
```

```
3901 1D14                      .LIST   LVC
3902 1D14 1D15 A VCCP:         .WORD   VCC0
3903 1D15                      ;                    THE FOLLOWING IS USED TO CLEAR THE OVERFLOW
3904 1D15                      ;                    STATUS BIT BEFORE EACH DIVIDE OPERATION
3905 1D15 0000 A VCC0:         .WORD   0
3906 1D16                      ;                    THE FOLLOWING ARE USED IN VCKFE
3907 1D16 046E A               .WORD   1134                 ; 0.277 B13    F1 COEFFICIENT FOR K4
3908 1D17 0051 A               .WORD   81                   ; 0.0198 B13   F2 COEFFICIENT FOR K4
3909 1D18 03A5 A               .WORD   933                  ; 0.228 B13    G1 COEFFICIENT FOR K4
3910 1D19 0F26 A               .WORD   3878                 ; 0.947 B13    G2 COEFFICIENT FOR K4
3911 1D1A 0000 A               .WORD   0
3912 1D1B 0F5C A               .WORD   3932                 ; 0.96 B13     K4 BIAS
3913 1D1C                      ;
3914 1D1C 1A9F A               .WORD   6799                 ; 1.66 B13     F1 COEFFICIENT FOR K5
3915 1D1D 15C2 A               .WORD   5570                 ; 1.36 B13     F2 COEFFICIENT FOR K5
3916 1D1E 2288 A               .WORD   8888                 ; 2.17 B13     G1 COEFFICIENT FOR K5
3917 1D1F 4199 A               .WORD   16793                ; 4.10 B13     G2 COEFFICIENT FOR K5
3918 1D20 0000 A               .WORD   0
3919 1D21 171B A               .WORD   5915                 ; 1.444 B13    K5 BIAS
3920 1D22                      ;                    MASK
3921 1D22 8000 A VCM15:        .WORD   X'8000               ; MASK FOR DOUBLE PRECISION COMPARISIONS
3922 1D23 1D92 A AVCBUS:       .WORD   VCBUS                ; POINTER TO VEHICLE IS BUS ROUTINE
3923 1D24 1D9B A AVCVNB:       .WORD   VCVNB                ; POINTER TO VEHICLE NOT BUS ROUTINE
3924 1D25 1DA2 A AVCER:        .WORD   VCER                 ; POINTER TO OVERFLOW ERROR ROUTINE
```

```
3927 1D26                .LIST   LVC
3928 1D26          ;                                   G1' > G2'
3929 1D26 860B A VCK2:   LD      AC1,D11(AC2)
3930 1D27 06B0 A VCK21:  DSUB    D8(AC2)                 ; B13     FORM G1' - G2'
     1D28 0008 A
3931 1D29 C1EB A         ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
3932 1D2A 0690 A         DIV     D1(AC2)                 ; FORM (G1' - G2') / A0
     1D2B 0001 A
3933 1D2C          ;                                   CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
3934 1D2C          ;                                   JUMP TO VCER
3935 1D2C 074E A         SKSTF   D14
3936 1D2D 2101 A         JMP     .+2
3937 1D2E 25F6 A         JMP     @AVCER
3938 1D2F A60D A         ST      AC1,D13(AC2)
3939 1D30 4C00 A         LI      AC0,C0
3940 1D31 A20C A         ST      AC0,D12(AC2)
3941 1D32 210F A         JMP     VCK5
3942 1D33          ;                                   G1' < G2'
3943 1D33 820F A VCK3:   LD      AC0,D8(AC2)             ; B13
3944 1D34 8609 A         LD      AC1,D9(AC2)
3945 1D35 06B0 A         DSUB    D10(AC2)                ; FORM (G2' - G1') / A0
     1D36 000A A
3946 1D37 C1DD A         ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
3947 1D38 0690 A         DIV     D1(AC2)                 ; FORM (G2' - G1') / A0
     1D39 0001 A
3948 1D3A          ;                                   CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
3949 1D3A          ;                                   JUMP TO VCER
3950 1D3A 074E A         SKSTF   D14
3951 1D3B 2101 A         JMP     .+2
3952 1D3C 25E8 A         JMP     @AVCER
3953 1D3D          ;                                   CONVERT QUOTIENT TO NEGATIVE AND STORE
3954 1D3D 5101 A         CAI     AC1,C1
3955 1D3E A60D A         ST      AC1,D13(AC2)
3956 1D3F 4C00 A         LI      AC0,C0
3957 1D40 5000 A         CAI     AC0,C0
3958 1D41 A20C A         ST      AC0,D12(AC2)
3959 1D42          ;                                   FORM C11*(T(C2) - T(C1))
3960 1D42 8604 A VCK5:   LD      AC1,D4(AC2)             ; B0
3961 1D43 D602 A         SUB     AC1,D2(AC2)
3962 1D44 0780 A         MPY     D1(AC3)                 ; B13
     1D45 0001 A
3963 1D46 A208 A         ST      AC0,D8(AC2)
3964 1D47 A609 A         ST      AC1,D9(AC2)
3965 1D48          ;                                   FORM C12 * (T(C3) - T(C2))  = F2'
3966 1D48 8606 A         LD      AC1,D6(AC2)
3967 1D49 D604 A         SUB     AC1,D4(AC2)
3968 1D4A 0780 A         MPY     D2(AC3)
     1D4B 0002 A
3969 1D4C A20A A         ST      AC0,D10(AC2)
3970 1D4D A60B A         ST      AC1,D11(AC2)
3971 1D4E          ;                                   FORM ABS(F2' - F1')
3972 1D4E F208 A         SKNE    AC0,D8(AC2)             ; SKIP IF UPPER F2' NOT = UPPER F1'
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3973 1D4F 2103 A          JMP     .+4
3974 1D50 E208 A          SKG     AC0,D8(AC2)             ; SKIP IF UPPER F2' > UPPER F1'
3975 1D51 2125 A          JMP     VCK9
3976 1D52 210E A          JMP     VCK8
3977 1D53 65CE A          AND     AC1,VCM15
3978 1D54 F5CD A          SKNE    AC1,VCM15               ; SKIP IF BIT 15 NOT SET
3979 1D55 2108 A          JMP     VCK7
3980 1D56 85CB A          LD      AC1,VCM15
3981 1D57 6609 A          AND     AC1,D9(AC2)
3982 1D58 F5C9 A          SKNE    AC1,VCM15               ; SKIP IF BIT 15 NOT SET
3983 1D59 211D A          JMP     VCK9
3984 1D5A 360B A VCK6:    LD      AC1,D11(AC2)
3985 1D5B E609 A          SKG     AC1,D9(AC2)             ; SKIP IF LOWER F2' > LOWER F1'
3986 1D5C 211A A          JMP     VCK9
3987 1D5D 2103 A          JMP     VCK8
3988 1D5E 6609 A VCK7:    AND     AC1,D9(AC2)
3989 1D5F F5C2 A          SKNE    AC1,VCM15
3990 1D60 21F9 A          JMP     VCK6
3991 1D61          ;                                      F2' > F1'
3992 1D61 4000 A VCK8:    LI      AC1,C0                  ; B0
3993 1D62 F60C A          SKNE    AC1,D12(AC2)            ; SKIP IF G2' - G1' NEGATIVE
3994 1D63 2137 A          JMP     VCVNB                   ; OTHERWISE JUMP TO NON-BUS ROUTINE
3995 1D64 820A A          LD      AC0,D10(AC2)            ; B13
3996 1D65 860B A          LD      AC1,D11(AC2)
3997 1D66 06B0 A          DSUB    D8(AC2)
     1D67 0008 A
3998 1D68 C1AC A          ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
3999 1D69 0690 A          DIV     D7(AC2)
     1D6A 0007 A
4000 1D6B          ;                                      CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
4001 1D6B          ;                                      JUMP TO VCER
4002 1D6B 074E A          SKSTF   D14
4003 1D6C 2101 A          JMP     .+2
4004 1D6D 25B7 A          JMP     @AVCER
4005 1D6E 4C00 A          LI      AC0,C0
4006 1D6F 06A0 A          DADD    D12(AC2)
     1D70 000C A
4007 1D71 3091 A          NOP
4008 1D72 07A0 A          DADD    D5(AC3)
     1D73 0005 A
4009 1D74 2100 A          JMP     .+1
4010 1D75 1225 A          BOC     CCZP,VCVNB              ; IF RESULTS =>0, JUMP TO NON-BUS ROUTINE
4011 1D76 2114 A          JMP     VCNK
4012 1D77          ;                                      F2' < F1'
4013 1D77 8208 A VCK9:    LD      AC0,D8(AC2)             ; B13
4014 1D78 8609 A          LD      AC1,D9(AC2)
4015 1D79 06B0 A          DSUB    D10(AC2)
     1D7A 000A A
4016 1D7B C199 A          ADD     AC0,VCC0                ; CLEAR OVERFLOW STATUS BIT
4017 1D7C 0690 A          DIV     D7(AC2)
     1D7D 0007 A
4018 1D7E          ;                                      CHECK FOR OVERFLOW. IF OVERFLOW OCCURS
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4019 1D7E          ;                                   JUMP TO VCER
4020 1D7E 074E A           SKSTF   D14
4021 1D7F 2101 A           JMP     .+2
4022 1D80 25A4 A           JMP     @AVCER
4023 1D81 A610 A           ST      AC1,D16(AC2)
4024 1D82 4C00 A           LI      AC0,C0
4025 1D83 8706 A           LD      AC1,D6(AC3)
4026 1D84 06B0 A           DSUB    D15(AC2)
     1D85 000F A
4027 1D86 3081 A           NOP
4028 1D87 06A0 A           DADD    D12(AC2)
     1D88 000C A
4029 1D89 2100 A           JMP     .+1
4030 1D8A 1210 A           BOC     CCZP,VCVNB          ; IF RESULTS =>0, JUMP TO NON-BUS ROUTINE
4031 1D8B            VCNK:
4032 1D8B FD88 A           SKNE    AC3,VCCP            ; R0
4033 1D8C 2101 A           JMP     .+2
4034 1D8D 2104 A           JMP     VCBUS
4035 1D8E 4C06 A           LI      AC0,C6
4036 1D8F 3300 A           RADD    AC0,AC3
4037 1D90 2500 A           JMP     @AVCK
4038 1D91 1CF6 A AVCK:     .WORD   VCK
```

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 4041 1D92                      .LIST   LVC
 4042 1D92 4C00 A VCBUS:        LI      AC0,C0
 4043 1D93 4D19 A               LI      AC1,DPMD              ; AC0 = PREEMPT MINIMUM DURATION
 4044 1D94 B47B A               ST      AC1,@AVCBT
 4045 1D95 8C7D A               LD      AC3,AVCLOG
 4046 1D96 7B09 A               ISZ     D9(AC3)
 4047 1D97 0200 A               RTS     D0
 4048 1D98 7B08 A               ISZ     D8(AC3)
 4049 1D99 2100 A               JMP     .+1
 4050 1D9A 0200 A               RTS     D0
 4051 1D9B 4C01 A VCVNB:        LI      AC0,C1
 4052 1D9C 8C7D A               LD      AC3,AVCLOG
 4053 1D9D 7B0B A               ISZ     D11(AC3)
 4054 1D9E 0200 A               RTS     D0
 4055 1D9F 7B0A A               ISZ     D10(AC3)
 4056 1DA0 2100 A               JMP     .+1
 4057 1DA1 0200 A               RTS     D0
 4058 1DA2              VCER:
 4059 1DA2              ;                       ERROR DETECTED   OVERFLOW ON DIVIDE
 4060 1DA2 947E A               LD      AC1,@AVCDT
 4061 1DA3 8C77 A               LD      AC3,APERR
 4062 1DA4 2C49 A               JSR     @AERE0
 4063 1DA5 4C01 A               LI      AC0,C1
 4064 1DA6 0200 A               RTS     D0
```

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 4065 1DA7                      .PAGE
 4066 1DA7                      .ASECT
 4067 1DA7 1E00 A               .=X'1E00
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4070 1E00                .LIST   LEB
4071 1E00        ;
4072 1E00        ;                   ... BACKGROUND PROGRAMS ...
4073 1E00        EBKD:
4074 1EC0        ;
4075 1EC0        ;                   ... RAM ADDRESS TEST ...
4076 1EC0 80D6 A EBKD1:  LD      AC0,ADEND       ; START ADDRESS
4077 1E01 B0D4 A         ST      AC0,@ASSAD
4078 1E02 80F6 A         LD      AC0,H3DFF       ; END ADDRESS
4079 1E03 B0D5 A         ST      AC0,@ASEAD
4080 1E04        ;
4081 1E04 2C5A A         JSR     @ASMAD
4082 1E05 2104 A         JMP     EBKDE           ; ERROR RETURN, (AC2) = CONTENTS
4083 1E06                                        ;               (AC3) = ADDRESS
4084 1EC6 2100 A         JMP     .+1             ; NO ERROR RETURN
4085 1E07        ;
4086 1E07 0744 A         SKSTF   D4              ; SKIP IF STATUS IS SET
4087 1E08 21F7 A         JMP     EBKD1           ; RESTART RAM ADDRESS TEST
4088 1E09 2100 A         JMP     EBKDE           ; JUMP IF ERROR
4089 1E0A        ;
4090 1E0A        ;                   ... ERROR, TERMINAL WAIT LOOP ...
4091 1E0A 2100 A EBKDE:  JMP     .+1             ; WAIT FOR MONITOR ROUTINE TO INITIATE
4092 1E0B 21FE A         JMP     .-1             ;    ERROR RESPONSE
```

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4095 1E0C                .LIST   LEB
4096 1E0C          ;
4097 1E0C          ;                    ... RAM ADDRESS TEST ...
4098 1E0C 4CFF A SMAD:   LI      AC0,CM1         ; CLEAR ERROR COUNTER
4099 1E0D 88D5 A         LD      AC2,ASEAD       ; POINTER TO END ADDRESS
4100 1E0E 9CD4 A         LD      AC3,@ASSAD      ; START ADDRESS
4101 1E0F          ;
4102 1E0F AF00 A SMAD1:  ST      AC3,(AC3)       ; STORE ADDRESS AT EACH LOCATION
4103 1E10 4B01 A         AISZ    AC3,C1          ; INCREMENT ADDRESS
4104 1E11 EE00 A         SKG     AC3,(AC2)       ; SKIP IF DONE
4105 1E12 21FC A         JMP     SMAD1
4106 1E13          ;
4107 1E13 9CD4 A         LD      AC3,@ASSAD      ; START ADDRESS
4108 1E14 FF00 A SMAD2:  SKNE    AC3,(AC3)       ; SKIP IF MISMATCH
4109 1E15 2106 A         JMP     SMAD3           ; MATCH, CONTENTS = ADDRESS
4110 1E16 4801 A         AISZ    AC0,C1          ; SKIP IF FIRST ERROR
4111 1E17 1301 A         BOC     CCB0,SMADE      ; BRANCH IF SECOND ERROR
4112 1E18 21FB A         JMP     SMAD2           ; CONTINUE LOOP
4113 1E19          ;
4114 1E19          ;                    ... TWO CONSECUTIVE ADDRESS ERRORS ...
4115 1E19 8800 A SMADE:  LD      AC2,(AC3)       ; GET ERRONEOUS CONTENTS
4116 1E1A 0704 A         SETST   D4              ; SET STATUS FLAG 4
4117 1E1B 0200 A         RTS     D0              ; RETURN FROM SMAD (ERROR)
4118 1E1C          ;
4119 1E1C 4CFF A SMAD3:  LI      AC0,CM1         ; CLEAR ERROR COUNTER
4120 1E1D 4B01 A         AISZ    AC3,C1          ; INCREMENT ADDRESS
4121 1E1E EE00 A         SKG     AC3,(AC2)       ; SKIP IF DONE
4122 1E1F 21F4 A         JMP     SMAD2           ; CONTINUE LOOP
4123 1E20 0201 A         RTS     D1              ; RETURN FROM SMAD (NO ERROR)
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4124 1E21                .PAGE
4125 1E21                .ASECT
4126 1E21 1F00 A         .=X'1F00
4127 1F00        ;
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4130 1F00                .LIST   LBX
4131 1F00          ;                  ••• D A T A   I N P U T   C P C •••
4132 1F00          ;
4133 1F00          ;                  ••• DATA INPUT FOR RTC SEQUENCE •••
4134 1F00          ;
4135 1F00 8CE3 A BRTC:   LD      AC3,ATCP        ; INPUT AND SAVE DISCRETE INPUT WORD
4136 1F01 8868 A         LD      AC2,ABBUF
4137 1F02 0403 A         RIN     FC3
4138 1F03 A200 A         ST      AC0,D0(AC2)
4139 1F04 8CE0 A         LD      AC3,ALDU        ; INPUT AND SAVE COMMAND REGISTERS
4140 1F05 0403 A         RIN     FC3
4141 1F06 A201 A         ST      AC0,D1(AC2)
4142 1F07 0404 A         RIN     FC4
4143 1F08 A202 A         ST      AC0,D2(AC2)
4144 1F09          ;
4145 1F09 8CE9 A         LD      AC3,APPDU       ; INPUT AND SAVE PROG. PANEL DISCRETES
4146 1F0A 0403 A         RIN     FC3
4147 1F0B B08B A         ST      AC0,@ABPPD
4148 1F0C 0200 A         RTS     D0
4149 1F0D          ;
4150 1F0D          ;
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4153 1F0D                    .LIST   LBX
4154 1F0D          ;
4155 1F0D          ;                    ... DATA INPUT FROM PROG. PANEL ...
4156 1F0D          ;                        (THUMBWHEEL SWITCH DATA ONLY)
4157 1F0D          ;
4158 1F0D          ;                    ... THIS ROUTINE IS EXECUTED DURING RESTART
4159 1F0D          ;                        INITIALIZATION AND THEREAFTER ONLY UPON INPUT
4160 1F0D          ;                        REQUEST VIA THE PROG PANEL PUSHBUTTON ...
4161 1F0D          ;
4162 1F0D 88BB A BPAN:  LD      AC2,ABPPD       ; BASE ADDRESS OF INPUT DATA BUFFER
4163 1F0E 8CEA A        LD      AC3,APP1U       ; PLAN 1 PERIPHERAL DEVICE ADDRESS
4164 1F0F 2909 A        JSR     BPIN            ; READ AND SAVE PARAMETER SWITCH DATA
4165 1F10          ;
4166 1F10 4A07 A        AISZ    AC2,C7          ; INCREMENT BY LENGTH OF BUFFER
4167 1F11 2100 A        JMP     .+1
4168 1F12 8CEB A        LD      AC3,APP2U       ; PLAN 2 PERIPHERAL DEVICE ADDRESS
4169 1F13 2905 A        JSR     BPIN            ; READ AND SAVE PARAMETER SWITCH DATA
4170 1F14          ;
4171 1F14 4A07 A        AISZ    AC2,C7          ; INCREMENT BY LENGTH OF BUFFER
4172 1F15 2100 A        JMP     .+1
4173 1F16 8CEC A        LD      AC3,APP3U       ; PLAN 3 PERIPHERAL DEVICE ADDRESS
4174 1F17 2901 A        JSR     BPIN            ; READ AND SAVE PARAMETER SWITCH DATA
4175 1F18          ;
4176 1F18 0200 A        RTS     D0              ; RETURN FROM BPAN
4177 1F19          ;
4178 1F19          ;                    ... INPUT A SET OF PROG. PANEL PARAMETER SWITCHES ...
4179 1F19          ;                        (AC2) = BASE ADDRESS OF DATA BUFFER
4180 1F19          ;                        (AC3) = PERIPHERAL DEVICE ADDRESS
4181 1F19 0411 A BPIN:  RIN     FC11
4182 1F1A A201 A        ST      AC0,D1(AC2)
4183 1F1B 0412 A        RIN     FC12
4184 1F1C A202 A        ST      AC0,D2(AC2)
4185 1F1D 0413 A        RIN     FC13
4186 1F1E A203 A        ST      AC0,D3(AC2)
4187 1F1F 0414 A        RIN     FC14
4188 1F20 A204 A        ST      AC0,D4(AC2)
4189 1F21 0415 A        RIN     FC15
4190 1F22 A205 A        ST      AC0,D5(AC2)
4191 1F23 0410 A        RIN     FC10
4192 1F24 A206 A        ST      AC0,D6(AC2)
4193 1F25 0417 A        RIN     FC17
4194 1F26 A207 A        ST      AC0,D7(AC2)
4195 1F27          ;
4196 1F27 0200 A        RTS     D0              ; RETURN FROM BPIN
4197 1F28          ;
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```
                        .LIST   LBX
                ;                       ... D A T A   O U T P U T   C P C ...
                ;
                ;                       ... DATA OUTPUT FOR RTC SEQUENCE ...
4204 1F28 8CE0 A XRTC:  LD      AC3,ALDU
4205 1F29 886B A        LD      AC2,AXBUF
4206 1F2A 8201 A        LD      AC0,D1(AC2)
4207 1F2B 0601 A        POUT    FC1             ; OUTPUT COMMAND WORD 1
4208 1F2C 8202 A        LD      AC0,D2(AC2)
4209 1F2D 0602 A        POUT    FC2             ; OUTPUT COMMAND WORD 2
4210 1F2E 8CE4 A        LD      AC3,ASDU
4211 1F2F 8200 A        LD      AC0,D0(AC2)
4212 1F30 0601 A        POUT    FC1             ; OUTPUT STATUS DISPLAY WORD
4213 1F31 0200 A        RTS     D0
4214 1F32       ;
4215 1F32 8CE0 A XWDT:  LD      AC3,ALDU
4216 1F33 4C00 A        LI      AC0,C0
4217 1F34 0641 A        POUT    FC41            ; RESET CONTROL PULSE FOR DWELL TIMER
4218 1F35 0200 A        RTS     D0
4219 1F36       ;
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DATA OUTPUT CPC - FORMAT OUTPUT COMMAND WORDS

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4222 1F36                .LIST   LBX
4223 1F36          ;
4224 1F36          ;                    ...FORMAT OUTPUT COMMAND WORDS ...
4225 1F36 8881 A XSDC:   LD      AC2,ATBUF
4226 1F37 8200 A         LD      AC0,D0(AC2)      ; FETCH COMMAND INDEX WORD
4227 1F38 1512 A         BOC     CCNZ,XFOW        ; TEST FOR NON-ZERO WORD FOR NEW COMMAND
4228 1F39 90A0 A         LD      AC0,@AECMF       ; COMMAND FEEDBACK ERROR FLAG
4229 1F3A 1508 A         BOC     CCNZ,XCER        ; BRANCH IF ERROR
4230 1F3B          ;                    ... (INSERT ADDITIONAL TESTS HERE)
4231 1F3B 886B A         LD      AC2,AXBUF
4232 1F3C 8201 A         LD      AC0,D1(AC2)
4233 1F3D 60F0 A         AND     AC0,H7FFF        ; CLEAR UPDATE BIT IN COMMAND WORD 1
4234 1F3E A201 A         ST      AC0,D1(AC2)
4235 1F3F 8202 A         LD      AC0,D2(AC2)
4236 1F40 60F0 A         AND     AC0,H7FFF        ; CLEAR UPDATE BIT IN COMMAND WORD 2
4237 1F41 A202 A         ST      AC0,D2(AC2)
4238 1F42 0200 A         RTS     D0
4239 1F43          ;                    ... COMMAND ERROR, SET UPDATE BIT FOR NEXT OUTPUT ...
4240 1F43 886B A XCER:   LD      AC2,AXBUF
4241 1F44 8201 A         LD      AC0,D1(AC2)      ; XOCW1
4242 1F45 60F0 A         AND     AC0,H7FFF        ; CLEAR UPDATE BIT
4243 1F46 A201 A         ST      AC0,D1(AC2)
4244 1F47 8202 A         LD      AC0,D2(AC2)      ; XOCW2
4245 1F48 072F A         SETBIT  D15              ; SET UPDATE BIT
4246 1F49 A202 A         ST      AC0,D2(AC2)
4247 1F4A 0200 A         RTS     D0
4248 1F4B          ;
4249 1F4B          ;                    ... FORMAT NEW OUTPUT COMMAND WORDS ...
4250 1F4B 6137 A XFOW:   AND     AC0,H7F00        ; EXTRACT MAIN STREET COMMAND INDEX
4251 1F4C 5CF8 A         SHR     AC0,D8           ; SHIFT TO LOWER BITS
4252 1F4D 1102 A         BOC     CCEZ,XMCE
4253 1F4E E147 A         SKG     AC0,XIMX         ; TEST FOR VALID INDEX (1 TO XIMX)
4254 1F4F 210C A         JMP     XFO1
4255 1F50          ;
4256 1F50          ;                    ... INVALID MAIN STREET COMMAND INDEX ...
4257 1F50 8881 A XMCE:   LD      AC2,ATBUF
4258 1F51 8200 A         LD      AC0,D0(AC2)      ; FETCH COMMAND INDEX WORD
4259 1F52 886C A         LD      AC2,AXERR
4260 1F53 A202 A         ST      AC0,D2(AC2)      ; STORE IN ERROR BUFFER, XERRO
4261 1F54 8201 A         LD      AC0,D1(AC2)      ; FETCH ERROR COUNTER AND INCREMENT
4262 1F55 4801 A         AISZ    AC0,C1
4263 1F56 2100 A         JMP     .+1
4264 1F57 A201 A         ST      AC0,D1(AC2)
4265 1F58 8200 A         LD      AC0,D0(AC2)
4266 1F59 0720 A         SETBIT  D0               ; SET ERROR FLAG BIT 0
4267 1F5A A200 A         ST      AC0,D0(AC2)
4268 1F5B 0200 A         RTS     D0
4269 1F5C          ;
4270 1F5C 8D27 A XFO1:   LD      AC3,AXCFT        ; FETCH ADDRESS OF COMMAND FORMAT TABLE
4271 1F5D 3300 A         RADD    AC0,AC3          ; ADD COMMAND INDEX
4272 1F5E 8300 A         LD      AC0,(AC3)        ; FETCH COMMAND FORMAT
4273 1F5F 8C6B A         LD      AC3,AXBUF
```

DATA OUTPUT CPC - FORMAT OUTPUT COMMAND WORDS

```
4274 1F60 A301 A          ST      AC0,D1(AC3)     ; STORE IN XOCW1
4275 1F61          ;
4276 1F61 8200 A          LD      AC0,D0(AC2)     ; FETCH COMMAND INDEX WORD
4277 1F62 611F A          AND     AC0,H007F       ; EXTRACT CROSS STREET INDEX
4278 1F63 1102 A          BOC     CCEZ,XCCE
4279 1F64 E131 A          SKG     AC0,XIMX        ; TEST FOR VALID INDEX (1 TO XIMX)
4280 1F65 210C A          JMP     XFO2
4281 1F66          ;
4282 1F66          ;                    ... INVALID CROSS STREET COMMAND INDEX ...
4283 1F66 8881 A XCCE:    LD      AC2,ATBUF
4284 1F67 8200 A          LD      AC0,D0(AC2)     ; FETCH COMMAND INDEX WORD
4285 1F68 886C A          LD      AC2,AXERR
4286 1F69 A204 A          ST      AC0,D4(AC2)     ; STORE IN ERROR BUFFER, XERR1
4287 1F6A 8203 A          LD      AC0,D3(AC2)     ; FETCH ERROR COUNTER AND INCREMENT
4288 1F6B 4801 A          AISZ    AC0,C1
4289 1F6C 2100 A          JMP     .+1
4290 1F6D A203 A          ST      AC0,D3(AC2)
4291 1F6E 8200 A          LD      AC0,D0(AC2)
4292 1F6F 0721 A          SETBIT  D1              ; SET ERROR FLAG BIT 1
4293 1F70 A200 A          ST      AC0,D0(AC2)
4294 1F71 0200 A          RTS     D0
4295 1F72          ;
4296 1F72 8D11 A XFO2:    LD      AC3,AXCFT       ; FETCH ADDRESS OF COMMAND FORMAT TABLE
4297 1F73 3300 A          RADD    AC0,AC3         ; ADD COMMAND INDEX
4298 1F74 8300 A          LD      AC0,(AC3)       ; FETCH COMMAND FORMAT
4299 1F75 072F A          SETBIT  D15             ; SET UPDATE BIT
4300 1F76 8C6B A          LD      AC3,AXBUF
4301 1F77 A302 A          ST      AC0,D2(AC3)     ; STORE IN XOCW2
4302 1F78          ;
4303 1F78 8881 A          LD      AC2,ATBUF
4304 1F79 8C6B A          LD      AC3,AXBUF
4305 1F7A 8303 A          LD      AC0,D3(AC3)     ; FETCH CURRENT AND STORE IN PREVIOUS
4306 1F7B A304 A          ST      AC0,D4(AC3)     ;    COMMAND INDEX WORD
4307 1F7C 8200 A          LD      AC0,D0(AC2)     ; FETCH AND SAVE CURRENT COMMAND
4308 1F7D A303 A          ST      AC0,D3(AC3)     ;    INDEX WORD
4309 1F7E 4C00 A          LI      AC0,C0
4310 1F7F A200 A          ST      AC0,D0(AC2)       ; ZERO COMMAND INDEX WORD(TCIWC)
4311 1F80 0200 A          RTS     D0
4312 1F81          ;
4313 1F81          ;                    ... LOCAL DATA ...
4314 1F81 0006 A H0006:   .WORD   X'0006          ; HEX CONSTANT (BITS 1,2 SET)
4315 1F82 007F A H007F:   .WORD   X'007F          ; HEX CONSTANT (BITS 15 - 8 RESET)
4316 1F83 7F00 A H7F00:   .WORD   X'7F00          ; HEX CONSTANT (BITS 15 AND 7 - 0 RESET)
4317 1F84          ;
```

```
4320 1F84                .LIST   LBX
4321 1F84        ;
4322 1F84        ;                    ... COMMAND FORMAT TABLE ...
4323 1F84 1F84 A AXCFT:  .WORD   XCFT-1
4324 1F85        XCFT:
4325 1F85        ;                                                  L
4326 1F85        ;                                                  T          S
4327 1F85        ;                                                             E
4328 1F85        ;                                                  P   S      C   P
4329 1F85        ;                                              U   R   P      O   R
4330 1F85        ;                                              P   I   E      N   I
4331 1F85        ;                                              D   M   C      D   M
4332 1F85        ;                                              A   A   I   P  A   A
4333 1F85        ;                                              T   R   A   E  R   R
4334 1F85        ;                                              E   Y   L   D  Y   Y
4335 1F85        ;
4336 1F85        ;                                                  C   C   C   C
4337 1F85        ;                                                  LS  LS  LS  LS
4338 1F85        ;                                                  ET  ET  ET  ET
4339 1F85        ;                                  COMMAND     GG GAO GAO GAO GAO
4340 1F85        ;                                   INDEX      OO ORP ORP ORP ORP
4341 1F85        ;
4342 1F85        ;                                               BITS SET = 1 (CIRCUITS ON)
4343 1F85        ;                                              1 111 11
4344 1F85        ;                                              5 432 109 876 543 210
4345 1F85        ;
4346 1F85        ;      ... PBD33J ...
4347 1F85 0249 A          .WORD   X'0249          ; 1            S   S   S   S
4348 1F86 0324 A          .WORD   X'0324          ; 2            S G   G   G       G GO
4349 1F87 02A4 A          .WORD   X'02A4          ; 3            S   C   G   G     C CLEAR
4350 1F88 0264 A          .WORD   X'0264          ; 4            S   S G   G       S STOP
4351 1F89 0252 A          .WORD   X'0252          ; 5            S   S   C   C
4352 1F8A        ;
4353 1F8A        ;      ... PBD14C ...
4354 1F8A 1124 A          .WORD   X'1124          ; 6          G     G   G   G
4355 1F8B 10A4 A          .WORD   X'10A4          ; 7          G       C   G   G
4356 1F8C 1094 A          .WORD   X'1094          ; 8          G       C   C   G
4357 1F8D 304C A          .WORD   X'304C          ; 9        GG        S   S   G
4358 1F8E 044A A          .WORD   X'044A          ; A            C     S   S   C
4359 1F8F 0921 A          .WORD   X'0921          ; B          G   G   G   G     S
4360 1F90 1121 A          .WORD   X'1121          ; C          G     G   G   G   S
4361 1F91 0249 A          .WORD   X'0249          ; D              S   S   S   S
4362 1F92 0041 A          .WORD   X'0041          ; F                  S       S
4363 1F93 0104 A          .WORD   X'0104          ; F                G       G
4364 1F94 0084 A          .WORD   X'0084          ; 10               C       G
4365 1F95 0082 A          .WORD   X'0082          ; 11               C       C
4366 1F96        ;
4367 1F96        XCFTE:                           ; END OF COMMAND FORMAT TABLE
4368 1F96 0011 A XIMX:   .WORD   XCFTE-XCFT       ; MAXIMUM VALUE OF COMMAND INDEX
4369 1F97        ;
```

DATA OUTPUT CPC - TURN STATUS LIGHTS ON/OFF

```
4372 1F97                .LIST   LBX
4373 1F97          ;
4374 1F97          ;                    ... TURN STATUS LIGHTS ON/OFF ...
4375 1F97          ;                        UPON ENTRY, AC3 CONTAINS PERIPHERAL
4376 1F97          ;                                    DEVICE ADDRESS
4377 1F97          ;
4378 1F97          ;                    ... TURN STATUS LIGHT 1 ON ...
4379 1F97          XLON1:
4380 1F97 4C00 A           LI      AC0,C0
4381 1F98 0644 A           ROUT    FC44            ; OUTPUT CONTROL PULSE
4382 1F99 0200 A           RTS     D0              ; RETURN FROM XLON1
4383 1F9A          ;
4384 1F9A          ;                    ... TURN STATUS LIGHT 1 OFF ...
4385 1F9A          XLOF1:
4386 1F9A 4C00 A           LI      AC0,C0
4387 1F9B 0645 A           ROUT    FC45            ; OUTPUT CONTROL PULSE
4388 1F9C 0200 A           RTS     D0              ; RETURN FROM XLOF1
4389 1F9D          ;
4390 1F9D          ;                    ... TURN STATUS LIGHT 2 ON ...
4391 1F9D          XLON2:
4392 1F9D 4C00 A           LI      AC0,C0
4393 1F9E 0646 A           ROUT    FC46            ; OUTPUT CONTROL PULSE
4394 1F9F 0200 A           RTS     D0              ; RETURN FROM XLON2
4395 1FA0          ;
4396 1FA0          ;                    ... TURN STATUS LIGHT 2 OFF ...
4397 1FA0          XLOF2:
4398 1FA0 4C00 A           LI      AC0,C0
4399 1FA1 0647 A           ROUT    FC47            ; OUTPUT CONTROL PULSE
4400 1FA2 0200 A           RTS     D0              ; RETURN FROM XLOF2
```

DATA OUTPUT CPC - TURN STATUS LIGHTS ON/OFF

```
4401 1FA3                .PAGE
4402 1FA3                .ASECT
4403 1FA3 3000 A         .=X'3000
4404 3000        ;
```

```
4407 3000                .LIST   LDB
4408 3000          ;
4409 3000          ;                    ... D A T A   B A S E ...
4410 3000          ;
4411 3000          ;
4412 3000          ;                    ... BUS DETECTOR SIGNATURE DATA ...
4413 3000          ;
4414 3000          ;          ( UP TO 32 DETECTORS @ 8 WORDS PER SIGNATURE)
4415 3000          ;
4416 3000          ;                         WORD 0 - TOTAL SIGNATURE DURATION
4417 3000          ;                              1 - AMPLITUDE OF FIRST PEAK
4418 3000          ;                              2 - TIME OF FIRST PEAK
4419 3000          ;                              3 - AMPLITUDE OF SECOND PEAK
4420 3000          ;                              4 - TIME OF SECOND PEAK
4421 3000          ;                              5 - AMPLITUDE OF THIRD OR LAST PEAK
4422 3000          ;                              6 - TIME OF LAST PEAK
4423 3000          ;                              7 - END OF SIGNATURE STATUS
4424 3000          ;
4425 3000          VCSDB:
4426 3000 3100 A           .=.+256
4427 3100          ;
4428 3100          ;                    ... DATA INPUT CPC DATA BASE ...
4429 3100          BBUF:
4430 3100 3101 A BDIN:     .=.+1                ; DISCRETE INPUT DATA WORD
4431 3101 3102 A BCR1:     .=.+1                ; COMMAND REGISTER 1 STATUS
4432 3102 3103 A BCR2:     .=.+1                ; COMMAND REGISTER 2 STATUS
4433 3103          ;
4434 3103          ;                    ... PROG PANEL INPUT BUFFER ...
4435 3103          ;
4436 3103          ;                    ... DISCRETE SWITCHES ...
4437 3103          ;
4438 3103          ;                              DIAL 1
4439 3103          ;                         BIT 0, BUS PREEMPT
4440 3103          ;                         BIT 1, MASTER CONTROLLER SYNCH
4441 3103          ;
4442 3103          ;                              DIAL 2
4443 3103          ;                         BIT 4, BUS PREEMPT
4444 3103          ;                         BIT 5, MASTER CONTROLLER SYNCH
4445 3103          ;
4446 3103          ;                              DIAL 3
4447 3103          ;                         BIT 8, BUS PREEMPT
4448 3103          ;                         BIT 9, MASTER CONTROLLER SYNCH
4449 3103          ;
4450 3103          ;                         BIT 10, INPUT REQUEST
4451 3103          ;                         BIT 11, MANUAL OVERRIDE
4452 3103 3104 A BPPD:     .=.+1
4453 3104          ;
4454 3104          ;                    ... THUMBWHEEL INPUT DATA ...
4455 3104          ;
4456 3104          ;                         D0, CYCLE LENGTH
4457 3104          ;                         D1, OFFSET 1
4458 3104          ;                         D2, OFFSET 2
```

```
4459 3104          ;                          D3, OFFSET 3
4460 3104          ;                          D4, MSG SPLIT (%)
4461 3104          ;                          D5, INT 1
4462 3104          ;                          D6, INT 2
4463 3104 310B A BPD1:   .=.+7                ; DIAL 1
4464 310B 3112 A BPD2:   .=.+7                ; DIAL 2
4465 3112 3119 A BPD3:   .=.+7                ; DIAL 3
4466 3119          ;
4467 3119          ;                     ... DATA OUTPUT CPC DATA BASE ...
4468 3119          XBUF:
4469 3119 311A A XSDW:   .=.+1                ; STATUS DISPLAY WORD
4470 311A 311B A XOCW1:  .=.+1                ; OUTPUT COMMAND WORD 1 (MAIN STREET)
4471 311B 311C A XOCW2:  .=.+1                ; OUTPUT COMMAND WORD 2 (CROSS STREET)
4472 311C 311D A XCIWC:  .=.+1                ; CURRENT COMMAND INDEX WORD
4473 311D 311E A XCIWP:  .=.+1                ; PREVIOUS COMMAND INDEX WORD
4474 311E          ;
4475 311E          ;                     ... PREEMPT CPC DATA BASE ...
4476 311E          PBUF:
4477 311E 311F A PIP:    .=.+1                    ; PREEMPT IN PROGRESS FLAG
4478 311F 3120 A PTEM:   .=.+1                    ; TEMPORARY STORAGE LOCATION
4479 3120 3121 A PTCP:   .=.+1                ; PRIMARY CONTRACTIBLE INT ADDRESS
4480 3121 3122 A PTCS:   .=.+1                ; SECONDARY CONTRACTIBLE INT ADDRESS
4481 3122 3123 A PTEI:   .=.+1                ; EXTENDIBLE INT ADDRESS
4482 3123 3126 A PMIF:   .=.+3                    ; PREEMPT MONITOR INDEX FLAGS
4483 3126 3127 A PREQ:   .=.+1                    ; PREEMPT REQUEST FLAG
4484 3127 3128 A PMDT:   .=.+1                    ; PREEMPT MINIMUM DURATION TIMER
4485 3128 3129 A PTAVT:  .=.+1                    ; AVAILIBLE TIME FOR INTERVAL RESTORATION
4486 3129 312A A PTITE:  .=.+1                    ; INTERVAL TO BE RESTORED
4487 312A 312B A PTPMT:  .=.+1                    ; FIRST LOCATION OF MASTER TIMING PLAN
4488 312B          ;
4489 312B          ;                  ... MAXIMUM PREEMPT EXTENSION PARAMETERS ...
4490 312B 312C A PEMAX:  .=.+1                ; CURRENT DIAL
4491 312C 312D A         .=.+1                ; DIAL 1
4492 312D 312E A         .=.+1                ; DIAL 2
4493 312E 312F A         .=.+1                ; DIAL 3
4494 312F          ;
4495 312F          ;                     ... VEHICLE CLASSIFIER DATA ...
4496 312F 3130 A VCDT:   .=.+1                    ; VEHICLE DETECTOR INDEX
4497 3130 3131 A VCBT:   .=.+1                ; TIMER FOR RECENT BUS CLASS.
4498 3131          ;
4499 3131 3151 A VCVC:   .=.+32               ; VEHICLE COUNTERS (ONE PER DETECTOR)
4500 3151 3165 A VCDB:   .=.+20
4501 3165          ;
4502 3165          ;                     ... VEHICLE CLASSIFIER VEHICLE LOG ...
4503 3165          ;
4504 3165          ;                          DOUBLE PRECISION, UNSIGNED WORDS
4505 3165          ;
4506 3165          VCLOG:
4507 3165 3167 A         .=.+2                    ; NUMBER OF SIGNATURES REJECTED AS NOISE
4508 3167 3169 A         .=.+2                    ; NUMBER OF GROSS TEST FAILURES
4509 3169 316B A         .=.+2                    ; NUMBER OF VEHICLES HANDLED BY
4510 316B          ;                               STOPPED VEHICLE CLASSIFIER
```

```
4511 316B 316D A          .=.+2                    ; NUMBER OF VEHICLES HANDLED BY
4512 316D                 ;                          MOVING VEHICLE CLASSIFIER
4513 316D 316F A          .=.+2                    ; NUMBER OF VEHICLES CLASSIFIED
4514 316F                 ;                          AS BUSES
4515 316F 3171 A          .=.+2                    ; NUMBER OF VEHICLES CLASSIFIED
4516 3171                 ;                          AS NON-BUSES
4517 3171                 ;
4518 3171                 ;              ... TIMING PLAN CPC DATA BASE ...
4519 3171                 TBUF:
4520 3171 3172 A TCIWC:   .=.+1                    ; COMMAND INDEX WORD BUFFER
4521 3172 3173 A TCDS:    .=.+1                    ; CURRENT DIAL SELECTION
4522 3173 3174 A TIN:     .=.+1                    ; CURRENT INTERVAL INDEX
4523 3174 3175 A TINT:    .=.+1                    ; CURRENT INTERVAL TIMER
4524 3175 3176 A TFST:    .=.+1                    ; WAIT FOR SYNC START FLAG
4525 3176 3177 A TECC:    .=.+1                    ; END OF CYCLE FLAG
4526 3177 3178 A TEMP:    .=.+1                    ; TEMPORARY LOCATION
4527 3178 3179 A TDWL:    .=.+1                    ; DIAL 1, MAX DWELL FOR SYNC START
4528 3179 317A A          .=.+1                    ; DIAL 2, MAX DWELL FOR SYNC START
4529 317A 317B A          .=.+1                    ; DIAL 3, MAX DWELL FOR SYNC START
4530 317B 318F A TPM1:    .=.+20                   ; MASTER TP TABLE, DIAL 1
4531 318F 31A3 A TPM2:    .=.+20                   ; MASTER TP TABLE, DIAL 2
4532 31A3 31B7 A TPM3:    .=.+20                   ; MASTER TP TABLE, DIAL 3
4533 31B7 31CB A TNTP:    .=.+20                   ; NEXT TP TABLE
4534 31CB 31DF A TCTP:    .=.+20                   ; CURRENT TP TABLE
4535 31DF                 ;
4536 31DF                 ;              ... EXECUTIVE CPC DATA BASE ...
4537 31DF                 ;
4538 31DF                 EBUF:
4539 31DF 31E0 A ERTCF:   .=.+1                    ; RTC COMPUTE FLAG
4540 31E0                 ;
4541 31E0 31E1 A ETST:    .=.+1                    ; 'WAIT FOR SYNCH START' DWELL TIMER
4542 31E1                 ;
4543 31E1 31E2 A ETCY:    .=.+1                    ; CURRENT CYCLE TIMER
4544 31E2 31E3 A          .=.+1                    ; PREVIOUS MAXIMUM
4545 31E3 31E4 A          .=.+1                    ; PREVIOUS MINIMUM
4546 31E4 31E5 A EPST:    .=.+1                    ; START PULSE INDICATOR
4547 31E5 31E6 A EPDT:    .=.+1                    ; START PULSE DURATION TIMER
4548 31E6                 ;
4549 31E6 31E7 A ECMF:    .=.+1                    ; TEMPORARY FLAG FOR ECOM
4550 31E7                 ESYD:                    ; SYNCH DATA BUFFER (DIAL 1,2,3)
4551 31E7                                          ;    WORD 0 - CYCLE LENGTH
4552 31E7                                          ;    WORD 1 - RESET 1 POSITION ON DIAL
4553 31E7                                          ;    WORD 2 - RESET 2 POSITION ON DIAL
4554 31E7                                          ;    WORD 3 - RESET 3 POSITION ON DIAL
4555 31E7                                          ;    WORD 4 - END OF START PULSE (3 %)
4556 31E7                                          ;    WORD 5 - SYNCH DIAL TIMER
4557 31E7 31ED A          .=.+6                    ; DIAL 1
4558 31ED 31F3 A          .=.+6                    ; DIAL 2
4559 31F3 31F9 A          .=.+6                    ; DIAL 3
4560 31F9                 ;
4561 31F9                 ;              ... LOOP MASTER INTERCONNECT DATA ...
4562 31F9 31FA A ER123:   .=.+1                    ; RESET SELECT
```

```
4563 31FA 31FB A ERN0:    .=.+1                ; ERN0, 0TH PAST VALUE OF R1,R2,R3
4564 31FB 31FC A          .=.+1                ; ERN1, 1ST PAST VALUE OF R1,R2,R3
4565 31FC 31FD A          .=.+1                ; ERN2, 2ND PAST VALUE OF R1,R2,R3
4566 31FD          ;
4567 31FD-31FE A ED23:    .=.+1                ; DIAL SELECT
4568 31FE 31FF A EDN0:    .=.+1                ; EDN0, 0TH PAST VALUE OF D2,D3
4569 31FF 3200 A          .=.+1                ; EDN1, 1ST PAST VALUE OF D2,D3
4570 3200 3201 A          .=.+1                ; EDN2, 2ND PAST VALUE OF D2,D3
4571 3201          ;
4572 3201 3202 A EDMIT:   .=.+1                ; DETECTOR MONITORING INTERVAL TIMER
4573 3202 3203 A EDETT:   .=.+1                ; TEMP STORAGE FOR DET MONITORING
4574 3203          ;
```

```
4577 3203                .LIST   LDB
4578 3203          ;
4579 3203          ;                    ... SAVE AREA FOR RTC INTERRUPTS ...
4580 3203          ESAV:
4581 3203 3204 A           .=.+1                    ; AC0
4582 3204 3205 A           .=.+1                    ; AC1
4583 3205 3206 A ESV2:     .=.+1                    ; AC2
4584 3206 3207 A           .=.+1                    ; AC3
4585 3207 3208 A ESVF:     .=.+1                    ; RALU FLAGS
4586 3208 3218 A           .=.+16                   ; STACK SAVE AREA
4587 3218 3219 A ESVS:     .=.+1                    ; SELECT FLAG STATE
4588 3219          ;
4589 3219          ;                    ... SNAPSHOT (COTF) SAVE AREA ...
4590 3219          CSAV:
4591 3219 321A A           .=.+1                    ; AC0
4592 321A 321B A           .=.+1                    ; AC1
4593 321B 321C A CSV2:     .=.+1                    ; AC2
4594 321C 321D A           .=.+1                    ; AC3
4595 321D 321E A CSVF:     .=.+1                    ; RALU FLAGS
4596 321E 322E A           .=.+16                   ; STACK SAVE AREA
4597 322E 322F A CSVS:     .=.+1                    ; SELECT FLAG STATE
4598 322F          ;
4599 322F          ;                    ... STACKFULL SAVE AREA ...
4600 322F          ISV:
4601 322F 3230 A ISV0:     .=.+1
4602 3230 3231 A ISV1:     .=.+1
4603 3231 3232 A ISV2:     .=.+1
4604 3232 3233 A ISV3:     .=.+1
4605 3233 3234 A ISTK1:    .=.+1
4606 3234 3235 A ISTK2:    .=.+1
4607 3235 3236 A ISTK3:    .=.+1
4608 3236 3237 A ISTK4:    .=.+1
4609 3237 3243 A ISTK5:    .=.+12
4610 3243          ;
4611 3243          ;                    ... DISCONNECT SAVE AREA ...
4612 3243          EDSAV:
4613 3243 3244 A           .=.+1                    ; AC0
4614 3244 3245 A           .=.+1                    ; AC1
4615 3245 3246 A EDSV2:    .=.+1                    ; AC2
4616 3246 3247 A           .=.+1                    ; AC3
4617 3247 3248 A EDSVF:    .=.+1                    ; RALU FLAGS
4618 3248 3258 A           .=.+16                   ; STACK SAVE AREA
4619 3258 3259 A EDSVS:    .=.+1                    ; SELECT FLAG STATE
4620 3259          ;
4621 3259          ;                    ... OPTIONAL USE SAVE AREA ...
4622 3259 3261 A CTST:     .=.+8                    ; OPTIONAL USE SAVE AREA
```

```
4625 3261                .LIST   LDB
4626 3261          ;
4627 3261          ;                    ... PROG. PANEL DATA ...
4628 3261          ;
4629 3261          ;                                  PANEL ROUTINE WORKING BUFFER
4630 3261 3268 A EPD1:   .=.+7                            ; (SAME ALLOCATION AS BPD1)
4631 3268 326F A EPD2:   .=.+7                            ; (SAME ALLOCATION AS BPD2)
4632 326F 3276 A EPD3:   .=.+7                            ; (SAME ALLOCATION AS BPD3)
4633 3276          ;
4634 3276          ;                                  PANEL CONVERTED DATA UPDATE BUFFER
4635 3276 3277 A EPCD1:  .=.+1                            ; FIRST ADJ. INT. LENGTH, DIAL 1
4636 3277 3278 A         .=.+1                            ; SECOND ADJ. INT. LENGTH, DIAL 1
4637 3278 3279 A         .=.+1                            ; DELTA EMAX,              DIAL 1
4638 3279 327A A         .=.+1                            ; CYCLE LENGTH             DIAL 1
4639 327A 327B A         .=.+1                            ; RESET 1                  DIAL 1
4640 327B 327C A         .=.+1                            ; RESET 2                  DIAL 1
4641 327C 327D A         .=.+1                            ; RESET 3                  DIAL 1
4642 327D 327E A         .=.+1                            ; START PULSE DURATION     DIAL 1
4643 327E 327F A         .=.+1                            ; MAX DWELL AT MSG         DIAL 1
4644 327F 3280 A         .=.+1                            ; INT2                     DIAL 1
4645 3280 328A A EPCD2:  .=.+10                           ;                          DIAL 2
4646 328A 3294 A EPCD3:  .=.+10                           ;                          DIAL 3
4647 3294          ;
4648 3294          ;                                  FIXED TIME IN CYCLE
4649 3294 3295 A EPFT:   .=.+1                            ; SUM OF FIXED INTERVALS   DIAL 1
4650 3295 3296 A         .=.+1                            ; SUM OF FIXED INTERVALS   DIAL 2
4651 3296 3297 A         .=.+1                            ; SUM OF FIXED INTERVALS   DIAL 3
4652 3297          ;
4653 3297 3298 A EP1E:   .=.+1                    ; ERROR FLAG FOR PLAN 1
4654 3298 3299 A EP2E:   .=.+1                    ; ERROR FLAG FOR PLAN 2
4655 3299 329A A EP3E:   .=.+1                    ; ERROR FLAG FOR PLAN 3
4656 329A 329B A EPDVE:  .=.+1                    ; ERROR FLAG FOR DATA VALIDITY
4657 329B          ;
4658 329B 329C A EPUF:   .=.+1                    ; PROG PANEL UPDATE FLAG
4659 329C 329D A EPCF:   .=.+1                    ; PROG PANEL COMPUTATION FLAG
4660 329D 329E A EPIR:   .=.+1                    ; STATE OF PROG PANEL INPUT REQ SWITCH
```

DATA BASE - SELF TEST DATA

```
4663 329E                .LIST   LDB
4664 329E          ;
4665 329E          ;                    ... SELF TEST DATA BASE ...
4666 329E 329F A SSAD:   .=.+1                  ; RAM ADDRESS TEST START ADDRESS
4667 329F 32A0 A SEAD:   .=.+1                  ; RAM ADDRESS TEST END ADDRESS
4668 32A0 32BE A         .=.+30                 ; (EXPANSIBILITY)
4669 32BE          ;
```

```
4672 32BE                .LIST   LDB
4673 32BE          ;
4674 32BE          ;                    ... E R R O R   B U F F E R ...
4675 32BE          ;
4676 32BE          ;                    ... DATA INPUT CPC ERROR FLAGS, COUNTERS, DATA ...
4677 32BE          BERR:
4678 32BE 32BF A   BERRF:   .=.+1                    ; ERROR FLAGS
4679 32BF          ;
4680 32BF          ;                    ... DATA OUTPUT CPC ERROR FLAGS, COUNTERS, DATA ...
4681 32BF          XERR:
4682 32BF 32C0 A   XERRF:   .=.+1                    ; ERROR FLAGS (SET CONDITION, BIT = 1)
4683 32C0          ;                                      BIT 0, INVALID COMMAND INDEX FOR
4684 32C0          ;                                             MAIN STREET
4685 32C0          ;                                      BIT 1, INVALID COMMAND INDEX FOR
4686 32C0          ;                                             CROSS STREET
4687 32C0 32C2 A   XERR0:   .=.+2                    ; ERROR COUNTER, ERROR WORD
4688 32C2 32C4 A   XERR1:   .=.+2                    ; ERROR COUNTER, ERROR WORD
4689 32C4          ;
4690 32C4          ;                    ... PREEMPT CPC ERROR FLAGS, COUNTERS, DATA ...
4691 32C4          PERR:
4692 32C4 32C5 A   PERRF:   .=.+1                    ; ERROR BUFFER FLAG (SET CONDITION, BIT = 1)
4693 32C5          ;                                      BIT 0, ARITHMETIC OVERFLOW
4694 32C5          ;                                      BIT 1, OUT OF RANGE (VCLASS DETECTOR INDEX)
4695 32C5          ;                                      BIT 2, DATA EXCEEDS BOUNDS (VEHICLE AMP)
4696 32C5          ;                                      BIT 3, DATA EXCEEDS BOUNDS (VEHICLE TIME)
4697 32C5          ;                                      BIT 4, DATA SEQUENCE ERROR (VEHICLE TIME)
4698 32C5          ;                                      BIT 5, DATA VALIDITY ERROR (NOISE)
4699 32C5          ;                                      BIT 6, EOS STATUS WORD ALTERED DURING COPY
4700 32C5          ;                                             OPERATION
4701 32C5          ;                                      BIT 7, SIGNATURE LOST DURING COPY OPERATION
4702 32C5          ;                                      BIT 8, OUT OF RANGE (PREQ DETECTOR INDEX)
4703 32C5          ;                                   ... PBD33J ...
4704 32C5          ;                                      BIT 9, DATA VALIDITY ERROR ( ATTEMPT
4705 32C5          ;                                             TO PREEMPT DOWNSTREAM VEHICLE)
4706 32C5          ;                                ... PBD14C ...
4707 32C5          ;                                      BIT 9, NON-POSITIVE DURATION OF SOURCE
4708 32C5          ;                                             EXCHANGE INTERVAL AT PREEMPT MOD
4709 32C5          ;
4710 32C5 32D9 A             .=.+20                    ; (ERROR COUNTER, ERROR WORD)
4711 32D9          ;
4712 32D9          ;                    ... TIMING PLAN CPC ERROR FLAGS, COUNTERS, DATA ...
4713 32D9          TERR:
4714 32D9 32DA A   TERRF:   .=.+1                    ; ERROR FLAGS (SET CONDITION, BIT = 1)
4715 32DA          ;                                      BIT 0, DIAL SELECT ERROR
4716 32DA          ;                                      BIT 1, INTERVAL INDEX OUT OF RANGE
4717 32DA 32DC A   TERR0:   .=.+2                    ; ERROR COUNTER, ERROR WORD
4718 32DC 32DE A   TERR1:   .=.+2                    ; ERROR COUNTER, ERROR WORD
4719 32DE          ;
4720 32DE          ;                    ... EXECUTIVE CPC ERROR FLAGS, COUNTERS, DATA ...
4721 32DE          EERR:
4722 32DE 32DF A   EERRF:   .=.+1                    ; ERROR FLAGS (SET CONDITION, BIT = 1)
4723 32DF          ;                                      BIT 0, RTC ERROR
```

```
4724 32DF                ;                                  BIT 1, DCR1.NE.DOCW1
4725 32DF                ;                                  BIT 2, DCR2.NE.DOCW2
4726 32DF                ;                                  BIT 3, MORE THAN ONE RESET HIGH
4727 32DF                ;                                  BIT 4, DETECTOR UNDERCOUNTING
4728 32DF                                                   ;       (TOTAL FOR ALL DETECTORS,
4729 32DF                                                   ;        INDEX OF LAST DETECTOR)
4730 32DF                ;                                  BIT 5, INVALID DET INDEX
4731 32DF 32E1 A EERR0:  .=.+2                              ; ERROR COUNTER, ERROR WORD
4732 32E1 32E3 A EERR1:  .=.+2                              ; ERROR COUNTER, ERROR WORD
4733 32E3 32E5 A EERR2:  .=.+2                              ; ERROR COUNTER, ERROR WORD
4734 32E5 32E7 A EERR3:  .=.+2                              ; ERROR COUNTER, ERROR WORD
4735 32E7 32E9 A EERR4:  .=.+2                              ; ERROR COUNTER, ERROR WORD
4736 32E9 32EB A EERR5:  .=.+2                              ; ERROR COUNTER, ERROR WORD
4737 32EB                ;
4738 32EB                ;                          ... PROG. PANEL ERROR DATA ...
4739 32EB                ;
4740 32EB                ;                               ERROR FLAGS (SET CONDITION, BIT = 1)
4741 32EB                ;                                  BIT 0, ERROR IN ADJ INT OF TP MASTER
4742 32EB                ;                                  BIT 1, DATA VALIDITY ERROR (CYCLE LENGTH)
4743 32EB                ;                                  BIT 2, DATA VALIDITY ERROR (OFFSET 1)
4744 32EB                ;                                  BIT 3, DATA VALIDITY ERROR (OFFSET 2)
4745 32EB                ;                                  BIT 4, DATA VALIDITY ERROR (OFFSET 3)
4746 32EB                ;                                  BIT 5, DATA VALIDITY ERROR (MSG SPLIT %)
4747 32EB                ;                                  BIT 6, DATA VALIDITY ERROR (INT1)
4748 32EB                ;                                  BIT 7, DATA VALIDITY ERROR (INT2)
4749 32EB                ;                                  BIT 8,  OUT OF RANGE (CYCLE LENGTH)
4750 32EB                ;                                  BIT 9,  OUT OF RANGE (OFFSET 1)
4751 32EB                ;                                  BIT 10, OUT OF RANGE (OFFSET 2)
4752 32EB                ;                                  BIT 11, OUT OF RANGE (OFFSET 3)
4753 32EB                ;                                  BIT 12, OUT OF RANGE (INT1)
4754 32EB                ;
4755 32EB                ;
4756 32EB 32EC A EPEF1:  .=.+1                              ; ERROR FLAGS
4757 32EC 3306 A         .=.+26                             ; (ERROR COUNTER, ERROR WORD)
4758 3306                ;
4759 3306 3307 A EPEF2:  .=.+1                              ; ERROR FLAGS
4760 3307 3321 A         .=.+26                             ; (ERROR COUNTER, ERROR WORD)
4761 3321                ;
4762 3321 3322 A EPEF3:  .=.+1                              ; ERROR FLAGS
4763 3322 333C A         .=.+26                             ; (ERROR COUNTER, ERROR WORD)
4764 333C                ;
4765 333C                ;                          ... DETECTOR ERROR COUNTERS, DATA ...
4766 333C                EDERR:
4767 333C 337C A         .=.+64                             ; (ERROR COUNTER, ERROR DATUM)
4768 337C                                                   ;    FOR 32 DETECTORS
4769 337C                ;
4770 337C                ;
4771 337C 337D A DEND:   .=.+1                              ; LAST LOCATION IN READ/WRITE DATA BASE
```

```
4772 337D                    .PAGE    '    '
4773 337D                    .LIST    1
4774 337D 0001 A LAC         =        1
4775 337D 0001 A LBP         =        1
4776 337D 0001 A LER         =        1
4777 337D 0001 A LES         =        1
4778 337D 0001 A LPP         =        1
4779 337D 0001 A LTP         =        1
4780 337D 0001 A LPR         =        1
4781 337D 0001 A LVC         =        1
4782 337D 0001 A LEB         =        1
4783 337D 0001 A LDY         =        1
4784 337D 0001 A LDB         =        1
4785 337D 0001 A LDU         =        1
4786 337D                    .EXTD
4787 337D                    .END
```

****** 0 ERRORS IN ASSEMBLY ******

```
ABBUF  ABDIN  ABERR  ABLSMU ABPAN  ABPD1  ABPD2  ABPD3  ABPPD  ABRTC
0068 A 0069 A 006A A 00E1 A 003E A 00BC A 00BD A 00BE A 00BB A 003C A

AC0    AC1    AC2    AC3    ACCU   ACCUI  ACDISP ACMU   ACOTF  ACRAM
0000 A 0001 A 0002 A 0003 A 00E8 A 10DA A 10DC A 00E2 A 003D A 10DD A

ACSAV  ACSV2  ACSVF  ACSVS  ACTST  ACWAP  ADEND  ADMU   AE10   AE100
00AE A 00AF A 00B0 A 00B1 A 00BA A 10DE A 00D6 A 00E5 A 00CC A 00CB A

AEADC  AEBKD  AEBUF  AECCU  AECCUR AECER  AECMF  AECOM  AED23  AEDERR
002F A 0024 A 009A A 0022 A 10DF A 0025 A 00A0 A 0028 A 00A4 A 00A8 A

AEDET  AEDETT AEDIS  AEDMIT AEDNO  AEDSV2 AEDSVF AEDSVS AEFOC  AEERR
002E A 00A7 A 0027 A 00A6 A 00A5 A 00B7 A 00B8 A 00B9 A 002C A 009F A

AEGIS  AEM10  AEM24  AEMAD  AEMIC  AEP1E  AEP2E  AEP3E  AEPAN  AEPBI2
0021 A 0047 A 0048 A 0023 A 002A A 00CD A 00CE A 00CF A 003F A 0045 A

AEPBI3 AEPCD1 AEPCD2 AEPCD3 AEPCF  AEPCY  AEPD1  AEPD2  AEPD3  AEPDT
0046 A 00C2 A 00C3 A 00C4 A 00C7 A 00C9 A 00BF A 00C0 A 00C1 A 009E A

AEPDVE AEPEF1 AEPEF2 AEPEF3 AEPFT  AEPIN1 AEPIR  AEPP1  AEPP2  AEPP3
00D0 A 00D1 A 00D2 A 00D3 A 00C5 A 00CA A 00C8 A 0041 A 0042 A 0043 A

AEPPM  AEPST  AEPUF  AEPUP  AER123 AERAM  AERE0  AERE1  AERF10 AERE11
0040 A 009D A 00C6 A 0044 A 00A2 A 00A9 A 0049 A 004A A 0053 A 0054 A

AERE12 AERE2  AERE3  AERE4  AERE5  AERE6  AERE7  AERE8  AERF9  AERNO
0055 A 004B A 004C A 004D A 004E A 004F A 0050 A 0051 A 0052 A 00A3 A

AERSI  AESAV  AESCH  AESDW  AESV2  AESVF  AESVS  AESYD  AESYN  AETCY
0020 A 00AA A 0026 A 002D A 00AB A 00AC A 00AD A 00A1 A 0029 A 009B A

AETIM  AETST  AISTK1 AISTK2 AISTK3 AISTK4 AISV2  ALDU   APBUF  APCIM
002B A 009C A 00B3 A 00B4 A 00B5 A 00B6 A 00B2 A 00E0 A 006D A 0034 A

APEMAX APERR  APEREQ APIP   APMDT  APMIF  APMON  APP1U  APP2U  APP3U
0076 A 0077 A 0074 A 006E A 0075 A 0073 A 0030 A 00EA A 00EB A 00EC A

APPDU  APREQ  APSWCH APTAVT APTCP  APTCS  APTEI  APTEM  APTER  APTITE
00E9 A 0032 A 1A4F A 0078 A 0070 A 0071 A 0072 A 006F A 0033 A 0079 A

APTPMT ARTC   ASDB   ASDU   ASEAD  ASMAD  ASSAD  ATAI1  ATAI2  ATBUF
007A A 00E7 A 00E6 A 00E4 A 00D5 A 005A A 00D4 A 0093 A 0094 A 0081 A

ATCDS  ATCIW  ATCIWC ATCOPY ATCP   ATCTP  ATDIAL ATDWL  ATFCI  ATEMP
0083 A 0097 A 0082 A 0036 A 00E3 A 008F A 0038 A 0089 A 0096 A 0088 A

ATEOC  ATERR  ATFST  ATHI   ATIMX  ATIN   ATINT  ATNCY  ATNTP  ATPE
0087 A 0090 A 0086 A 0092 A 0095 A 0084 A 0085 A 0037 A 008F A 0099 A
```

ATPEX	ATPM1	ATPM2	ATPM3	ATPP	ATPTAB	ATSCI	AVCBT	AVCBUS	AVCDB
0035 A	008B A	009C A	008D A	008A A	0098 A	0091 A	007B A	1D23 A	007F A
AVCDT	AVCER	AVCK	AVCLAS	AVCLOG	AVCSDB	AVCVC	AVCVNB	AXBUF	AXCFT
007E A	1D25 A	1D91 A	0031 A	007D A	0080 A	007C A	1D24 A	006B A	1F84 A
AXERR	AXLOF1	AXLOF2	AXLON1	AXLON2	AXRTC	AXSDC	AXWDT	BBUF	BCR1
006C A	0057 A	0059 A	0056 A	0058 A	0039 A	003B A	003A A	3100 A	3101 A
BCR2	BDIN	BERR	BERRF	BPAN	BPD1	BPD2	BPD3	BPIN	BPPD
3102 A	3100 A	325E A	32BE A	1F0D A	3104 A	310B A	3112 A	1F19 A	3103 A
BRTC	C0	C1	C125	C15	C2	C3	C4	C48	C5
1F00 A	0000 A	0001 A	007D A	000F A	0002 A	0003 A	0004 A	0030 A	0005 A
C6	C7	C8	CCB0	CCB1	CCCF	CCCU	CCEZ	CCNZ	CCPH
0006 A	0007 A	0008 A	0003 A	0004 A	000E A	000C A	0001 A	0005 A	000D A
CCSF	CCZN	CCZP	CM1	CM10	CM100	CM110	CM16	CM2	CM20
0008 A	000B A	0002 A	FFFF A	FFF6 A	FF9C A	FF92 A	FFF0 A	FFFE A	FFEC A
CM6	COTF	COTF1	COTF2	COTF3	COTF4	COTF5	CSAV	CSV2	CSVF
FFFA A	1143 A	114E A	115F A	1161 A	1172 A	1175 A	3219 A	321B A	321D A
CSVS	CTST	D0	D1	D10	D11	D116	D118	D12	D13
322E A	3259 A	0000 A	0001 A	000A A	000B A	0074 A	0076 A	000C A	000D A
D14	D15	D16	D17	D18	D19	D2	D20	D21	D22
000E A	000F A	0010 A	0011 A	0012 A	0013 A	0002 A	0014 A	0015 A	0016 A
D23	D24	D25	D26	D3	D4	D5	D6	D7	D8
0017 A	0018 A	0019 A	001A A	0003 A	0004 A	0005 A	0006 A	0007 A	0008 A
D9	DEND	DETS	DM1	DM12	DM2	DM4	DM7	DPMD	E10
0009 A	337C A	0001 A	FFFF A	FFF4 A	FFFE A	FFFC A	FFF9 A	0019 A	146C A
E100	EADC	EADC1	EADC2	EADC3	EADC4	EBKD	EBKD1	EBKDE	EBUF
146D A	110F A	111F A	1130 A	1132 A	113B A	1E00 A	1E00 A	1E0A A	31DF A
ECCU	ECCU1	ECCUI	ECCUR	ECER	ECMF	ECOM	ECOM1	ECOM2	ECOMR
10C2 A	10CB A	10DB A	10D9 A	10BF A	31E6 A	1212 A	1227 A	123B A	123E A
ED23	EDERR	EDET	EDET1	EDET2	EDET3	EDET32	EDETI	EDETM	EDETR
31FD A	333C A	12B2 A	12B6 A	12C6 A	12D3 A	12DE A	12DC A	12DD A	12DB A
EDETT	EDIS	EDISH	EDLAY	EDMIT	EDNO	EDSAV	EDSV2	EDSVF	EDSVS
3202 A	1200 A	120F A	110F A	3201 A	31FE A	3243 A	3245 A	3247 A	3258 A
EE0C	EERR	EERR0	EERR1	EERR2	EERR3	EERR4	EERR5	EERRF	EGIS
131B A	32DE A	32DF A	32E1 A	32E3 A	32E5 A	32E7 A	32E9 A	32DF A	1041 A

EGIS1	EGIS2	EGIS3	EGIS4	EGIS5	EHLT	EM10	EM24	EMAD	EMADE
104D A	105E A	108B A	10A7 A	10AA A	1039 A	174D A	1752 A	10E0 A	10EF A
EMADR	EMIC	EMIC1	EMIC2	EP1E	EP2E	EP3E	EPAN	EPAN1	EPANE
10F2 A	1282 A	1291 A	12A0 A	3297 A	3298 A	3299 A	1400 A	1426 A	1420 A
EPANE1	EPBI	EPBI1	EPBI2	EPBI3	EPBIR	EPCD1	EPCD2	EPCD3	EPCF
1422 A	1726 A	173E A	1733 A	1726 A	1745 A	3276 A	3280 A	328A A	329C A
EPCY	EPD1	EPD2	EPD3	EPDT	EPDVE	EPEF1	EPEF2	EPEF3	EPEOC
146A A	3261 A	3268 A	326F A	31E5 A	329A A	32EB A	3306 A	3321 A	1321 A
EPFI	EPFI1	EPFIR	EPFT	EPIN1	EPIR	EPP1	EPP10	EPP11	EPP12
1461 A	1462 A	1469 A	3294 A	146B A	329D A	14C4 A	14F3 A	150C A	1525 A
EPP13	EPP14	EPP15	EPP2	EPP20	EPP21	EPP22	EPP23	EPP24	EPP25
153E A	155B A	1572 A	1578 A	15A7 A	15C0 A	15D9 A	15F2 A	160F A	1626 A
EPP3	EPP30	EPP31	EPP32	EPP33	EPP34	EPP35	EPPM	EPPM1	EPPM2
162C A	165B A	1674 A	168D A	16A6 A	16C3 A	16DA A	146E A	1478 A	148B A
EPPM3	EPPM4	EPPM5	EPPMR	EPST	EPUF	EPUP	EPUPS	FR123	FRE0
1499 A	14A7 A	14B5 A	14C2 A	31E4 A	329B A	16E0 A	171A A	31F9 A	1340 A
ERE1	ERE10	ERE11	ERE12	ERE2	ERE3	ERE4	ERE5	ERE6	ERE7
1349 A	139A A	13A3 A	13AC A	1352 A	135B A	1364 A	136D A	1376 A	137F A
ERE8	ERE9	ERNO	ERSI	ERTC	ERTC1	ERTCF	ERTS	ESAV	ESCH
1383 A	1391 A	31FA A	1000 A	108B A	1098 A	31DF A	110D A	3203 A	10F3 A
ESDW	ESDW1	ESTK	ESTK1	ESV2	ESVF	ESVS	ESYA	ESYA1	ESYA2
12E0 A	1301 A	1061 A	1078 A	3205 A	3207 A	3218 A	1279 A	127C A	1281 A
ESYD	ESYN	ESYN1	ESYN2	ESYN3	ESYN4	ESYN4A	ESYN5	ESYN6	ETCPY
31E7 A	123F A	1257 A	125C A	1261 A	1267 A	1266 A	1272 A	1278 A	1023 A
ETCY	ETEOC	ETEOC1	ETEOC2	ETIM	ETIM1	ETIMR	ETST	EVCVC	EZDB
31E1 A	1333 A	1339 A	133D A	12A3 A	12AD A	12B1 A	31E0 A	12DF A	101C A
FC1	FC10	FC11	FC12	FC13	FC14	FC15	FC17	FC2	FC3
0001 A	0010 A	0011 A	0012 A	0013 A	0014 A	0015 A	0017 A	0002 A	0003 A
FC4	FC41	FC42	FC43	FC44	FC45	FC46	FC47	H0006	H0009
0004 A	0041 A	0042 A	0043 A	0044 A	0045 A	0046 A	0047 A	1F81 A	174C A
H000E	H000F	H0010	H0030	H007F	H0090	H00F0	H0200	H0400	H0900
12A1 A	1749 A	131A A	12A2 A	1F82 A	174B A	1748 A	00F5 A	14C3 A	174A A
H0F00	H0FFF	H1T1	H1T2	H2T1	H2T2	H3000	H3BFF	H3FFF	H7F00
1747 A	1040 A	1C8E A	1C8F A	1C90 A	1C91 A	00F1 A	00F6 A	00F2 A	1F83 A

H7FFF	HEC00	HECCF	HF800	HFFEF	INEN	ISTK1	ISTK2	ISTK3	ISTK4
00F0 A	00F3 A	00F4 A	1318 A	1319 A	0001 A	3233 A	3234 A	3235 A	3236 A
ISTK5	ISV	ISV0	ISV1	ISV2	ISV3	LAC	LBP	LBX	LDB
3237 A	322E A	322F A	3230 A	3231 A	3232 A	0001 A	0001 A	0001 A	0001 A
LDU	LEB	LER	LES	LPP	LPR	LTP	LVC	PBUF	PCIM
0001 A	0001 A	0001 A	0001 A	0001 A	0001 A	0001 A	0001 A	311F A	1A4E A
PEMAX	PERR	PEPRF	PFREQ	PIP	PM0	PM01	PM02	PM05	PM1
3128 A	32C4 A	32C4 A	3126 A	311E A	1A0F A	1A10 A	1A1A A	1A2B A	1A50 A
PM2	PM3	PM4	PM5	PMAS	PMAS2	PMDT	PMER10	PMHD	PMIF
1A53 A	1A8B A	1A8C A	1A8E A	1A48 A	1A4C A	3127 A	1A44 A	1A4F A	3123 A
PNM1	PMON	PMRET	PREQ	PSWCH	PSWFC	PSWFD	PTAVT	PTCP	PTCS
1A4D A	1A00 A	1A47 A	1AE6 A	1A98 A	1AAF A	1AB0 A	3128 A	3120 A	3121 A
PTEI	PTEM	PTER	PTITE	PTPMT	SEAD	SELF	SMAD	SMAD1	SMAD2
3122 A	311F A	1A88 A	3129 A	312A A	329F A	0002 A	1E0C A	1E0F A	1E14 A
SMAD3	SMADE	SSAD	T0	T1	T2	T3	TAI1	TAI2	TBUF
1E1C A	1E19 A	329E A	182D A	182E A	182F A	1830 A	18D5 A	18D6 A	3171 A
TCDS	TCIW	TCIWC	TCOPY	TCTP	TD1	TD2	TD3	TDCH	TDIAL
3172 A	1918 A	3171 A	18C9 A	31CB A	18B0 A	18AA A	18AE A	18B4 A	1896 A
TDSEL	TDWL	TECI	TEMP	TEOC	TERR	TERR0	TERR1	TERRF	TEZ
18B1 A	3178 A	18D8 A	3177 A	3176 A	32D9 A	32DA A	32DC A	32D9 A	184B A
TFEP	TFST	TGEZ	TGZ	THI	TIMX	TIN	TINT	TLFP	TLOOP
18E0 A	3175 A	1847 A	1852 A	18D4 A	18D7 A	3173 A	3174 A	18F1 A	18CA A
TLZ	TMSG	TNCY	TND2	TNDC	TNTP	TNXT	TOL	TPF	TPEX
1842 A	180E A	1866 A	18AC A	18C0 A	31B7 A	1831 A	1859 A	1967 A	1800 A
TPM1	TPM2	TPM3	TPTAB	TPUE	TRSET	TSCI	TSD2	TSD3	TSST
317B A	316F A	31A3 A	192C A	1896 A	1829 A	18D3 A	1878 A	187F A	1818 A
TSYNC	TSYNCE	TSYNCR	VC01	VC02	VC31	VC32	VC41	VC42	VCBT
1870 A	1888 A	1886 A	1C40 A	1C4D A	1C8A A	1C8B A	1C8C A	1C8D A	3130 A
VCBUS	VCC0	VCCP	VCDS	VCDHK	VCDT	VCER	VCER1	VCER2	VCER3
1D92 A	1D15 A	1D14 A	3151 A	1C92 A	312F A	1DA2 A	1C72 A	1C76 A	1C7A A
VCER4	VCGTF	VCHD	VCHE	VCHFE	VCK	VCK0	VCK1	VCK2	VCK21
1C7E A	1C6B A	1C82 A	1CEC A	1CBC A	1CF6 A	1D0C A	1D10 A	1D26 A	1D27 A
VCK3	VCK5	VCK6	VCK7	VCK8	VCK9	VCKFE	VCLAS	VCLD	VCLOG
1D33 A	1D42 A	1D5A A	1D5E A	1D61 A	1D77 A	1CED A	1C19 A	1C83 A	3165 A
VCM15	VCMA	VCMOF	VCMT	VCNK	VCRET	VCSDB	VCST1	VCST2	VCST3
1D22 A	1C84 A	1C86 A	1C85 A	1D8D A	1C3E A	3000 A	1C87 A	1C88 A	1C89 A

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VCVC   VCVNB  XBUF   XCCE   XCER   XCFT   XCFTE  XCIWC  XCIWP  XERR
3131 A 1D9B A 3119 A 1F66 A 1F43 A 1F85 A 1F96 A 311C A 311D A 32BF A

XERR0  XERR1  XERRF  XFO1   XFO2   XFOW   XIMX   XLOF1  XLOF2  XLON1
32C0 A 32C2 A 32BF A 1F5C A 1F72 A 1F4B A 1F96 A 1F9A A 1FA0 A 1F97 A

XLON2  XMCE   XOCW1  XOCW2  XRTC   XSDC   XSDW   XWDT
1F9D A 1F50 A 311A A 311B A 1F28 A 1F36 A 3119 A 1F32 A

   1BC0    7F96
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SNUMB = PB14C, ACTIVITY # = 03, REPORT CODE = 74, RECORD COUNT = 000026

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 ORIGIN   DATE MODULE ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION    ENTRY LOCATION

                      SUBPROGRAMS INCLUDED IN DECK.

                $      OPTION  FORTRAN,NOMAP
                $      LIBRARY L1

                      SUBPROGRAMS OBTAINED FROM USERS  LIBRARY   L1

                      SUBPROGRAMS OBTAINED FROM SYSTEM LIBRARY

                                        RANGE                SIZE
                ALLOCATED CORE     000000 THRU 047777       050000
                   RELOCATABLE     003400 THRU 047777       044400
                $      PRMFL   L1,R,R,USERLIB/UTILITY/BUTIL
                $      FILE    10,X1R
                $      FILE    11,X2R,40L
                $      FILE    S1,X3R,44R

                FCB AND BUFFER SPACE
                   AVAILABLE       000101 THRU 003377       003277
                   FILE CTRL BLKS  003174 THRU 003400       000205
                   MAXIMUM BUFFER SPACE REQUIRED            002404

                    20K, IS THE MINIMUM MEMORY NEEDED TO LOAD THIS ACTIVITY WITH ALL FILES OPEN     730517 F/8
                001306 LOCATIONS REQUIRED FOR LOAD TABLE
                EXECUTION PROGRAM ENTERED AT  047356   THROUGH  .FSETU
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SNUMB = PB14C, ACTIVITY # = 03, REPORT CODE = 06, RECORD COUNT = 001969

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221	ABDIN	1062 1233 1252 1283 1435 1443 2922 3013
222	ABERR	1415
394	ABLSMU	NOT USED
179	ABPAN	1694 1904
343	ABPD1	2006 2073 2106 2139 2172 2207
344	ABPD2	2246 2313 2346 2379 2412 2447
345	ABPD3	2486 2553 2586 2619 2652 2687
342	ABPPD	1866 3059 3365 4147 4162
175	ABRTC	505 837
8	AC0	437 454 455 460 475 478 480 490 491 498 499 537 561 565 567 568 585 586 588 589 591 592 599 600 601 602 603 604 605 606 607 608 609 610 614 619 638 655 659 660 661 663 664 666 669 670 686 687 690 711 712 714 718 742 743 748 752 762 763 765 766 768 789 790 791 792 801 802 803 804 827 853 854 871 876 881 883 884 901 902 904 905 907 908 914 919 924 943 947 949 950 967 968 970 971 973 974 979 994 999 1020 1021 1023 1027 1062 1077 1078 1082 1083 1086 1087 1093 1094 1096 1097 1099 1100 1101 1106 1107 1110 1111 1117 1118 1120 1121 1123 1124 1125 1128 1141 1144 1146 1148 1150 1152 1155 1156 1157 1158 1160 1161 1163 1168 1169 1175 1176 1182 1183 1191 1192 1195 1196 1197 1198 1202 1203 1206 1207 1214 1220 1233 1234 1238 1241 1243 1244 1246 1247 1252 1253 1257 1260 1262 1263 1265 1266 1283 1288 1289 1291 1292 1294 1295 1297 1307 1308 1314 1315 1339 1340 1341 1343 1352 1353 1358 1359 1378 1380 1382 1383 1384 1387 1389 1391 1394 1396 1398 1401 1403 1405 1410 1411 1413 1415 1417 1419 1422 1424 1427 1428 1430 1432 1435 1438 1440 1443 1446 1448 1467 1468 1486 1489 1490 1491 1492 1496 1497 1498 1499 1500 1501 1502 1503 1504 1516 1517 1538 1539 1541 1542 1544 1549 1550 1552 1553 1555 1560 1561 1563 1564 1566 1571 1572 1574 1575 1577 1582 1583 1585 1586 1588 1593 1594 1596 1597 1599 1604 1605 1607 1608 1610 1615 1616 1618 1619 1621 1626 1627 1629 1630 1632 1637 1638 1640 1641 1643 1648 1649 1651 1652 1654 1659 1660 1662 1663 1665 1670 1671 1673 1674 1676 1697 1698 1699 1700 1701 1738 1757 1765 1773 1781 1789 1804 1809 1814 1819 1841 1844 1866 1867 1870 1873 1876 1877 1878 1880 1892 1893 1894 1895 1896 1897 1922 1944 1965 1980 2007 2019 2020 2030 2031 2032 2034 2038 2039 2041 2043 2046 2047

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2849	2860	2894	2896	2902	2904	2922	2927	2928	2963
2964	2966	2968	2987	2988	2997	3003	3013	3016	3020
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3776	3777	3806	3813	3830	3837	3864	3865	3866	3871
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3958	3963	3969	3972	3974	3995	3998	4005	4013	4016
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4098	4110	4119	4138	4141	4143	4147	4182	4184	4186
4188	4190	4192	4194	4206	4208	4211	4216	4226	4228
4232	4233	4234	4235	4236	4237	4241	4242	4243	4244
4246	4250	4251	4253	4258	4260	4261	4262	4264	4265
4267	4271	4272	4274	4276	4277	4279	4284	4286	4287
4288	4290	4291	4293	4297	4298	4301	4305	4306	4307
4308	4309	4310	4380	4386	4392	4398			

9 AC1

519 520 526 527 562 570 581 615 624 634
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952 963 1006 1017 1028 1085 1087 1092 1109 1111
1116 1143 1144 1147 1148 1151 1152 1236 1239 1241
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1931 1932 1949 1950 1953 1954 1970 1971 1974 1975
1986 1987 1989 1990 2011 2013 2021 2023 2027 2032
2051 2057 2060 2061 2078 2079 2087 2091 2092 2095
2111 2112 2120 2124 2125 2128 2144 2145 2153 2157
2158 2161 2177 2184 2193 2194 2195 2196 2212 2214
2222 2226 2251 2253 2261 2263 2267 2272 2291 2297
2300 2301 2318 2319 2327 2331 2332 2335 2351 2352
2360 2364 2365 2368 2384 2385 2393 2397 2398 2401
2417 2424 2433 2434 2435 2436 2452 2454 2462 2466
2491 2493 2501 2503 2507 2512 2531 2537 2540 2541
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3076 3083 3084 3111 3132 3133 3135 3138 3142 3144
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3775 3788 3804 3807 3809 3822 3824 3828 3831 3833
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3889 3891 3892 3895 3896 3929 3938 3944 3954 3955
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4025 4043 4044 4060

10 AC2

464 466 474 475 479 480 481 483 488 490
492 494 497 499 513 514 518 519 524 525
526 559 560 561 562 563 571 573 575 577
579 580 612 613 614 615 616 623 626 628
630 632 633 637 638 639 640 641 654 655
658 659 660 663 664 666 670 685 687 698
699 700 702 704 706 717 718 719 720 721
750 752 753 757 758 759 760 763 766 852
855 869 870 871 872 873 887 889 891 893
895 896 941 942 943 944 945 953 955 957
959 961 962 1007 1008 1009 1011 1013 1015 1026
1027 1028 1029 1030 1081 1082 1084 1085 1091 1092

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11 AC3

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579	616	618	625	626	627	628	629	630	631
632	640	673	674	675	679	680	700	701	702
703	704	705	706	707	720	826	873	875	888
889	890	891	892	893	894	895	920	923	945
954	955	956	957	958	959	960	961	978	993
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2301	2306	2317	2318	2319	2323	2331	2334	2335	2339
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2452	2458	2465	2466	2470	2490	2491	2497	2502	2503
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3009	3018	3019	3103	3147	3148	3152	3153	3154	3155
3157	3158	3159	3160	3165	3168	3169	3170	3171	3188
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774  ACCUI
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776  ACDISP
                769
395  ACMU
                459
176  ACOTF
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777  ACRAM
                765
321  ACSAV
               NOT USED
322  ACSV2
                941   942   1026  1030
323  ACSVF
                950   953   1020
324  ACSVS
                971   974    999  1007
336  ACTST
               3049
778  ACWAP
                750   757
385  ADEND
                483   789   4076
398  ADMU
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364  AE100
               2189  2429  2669
365  AE10
               2054  2294  2534
162  AEADC
                643   727   813  1066  1748  3036
151  AEBKD
                542
291  AEBUF
                474   654   685
149  AECCU
                444
779  AECCUR
                762
152  AECER
                667
299  AECMF
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306  AED23
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310  AEDERR
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838
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332 AEDSV2
869 870
333 AEDSVF
864 887
334 AEDSVS
905 908
159 AEEOC
3001
297 AEERR
658 1091 1115 1154 1330 1348 1410 1427
148 AFGIS
139
189 AEM10
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2505 2573 2606 2639 2704
190 AEM24
2052 2292 2532
150 AEMAD
448
157 AEMIC
841
367 AEP1E
1698 1804 1894 1922 2020 2047 2069 2086 2102 2119
2135 2152 2169 2203 2221 2233
368 AEP2E
1699 1809 1895 1944 2260 2287 2309 2326 2342 2359
2375 2392 2408 2443 2461 2473
369 AEP3E
1700 1814 1896 1965 2500 2527 2549 2566 2582 2599
2615 2632 2648 2683 2701 2713
180 AEPAN
502
186 AEPBI2
2174 2414 2654
187 AEPBI3
2008 2075 2108 2141 2209 2248 2315 2348 2381 2449
2488 2555 2588 2621 2689
351 AEPCD1
2026 2042 2056 2094 2127 2160 2179 2192 2225 2729
2762 2775 2790
352 AEPCD2
2266 2282 2296 2334 2367 2400 2419 2432 2465 2740
2766 2780 2795

353 AEPCD3

2506 2522 2536 2574 2607 2640 2659 2672 2705 2751
2770 2784 2799

358 AEPCF

1877 1882 1885 1907 1928 1950 1971 1990

362 AEPCY

2012 2021 2252 2261 2492 2501

347 AEPD1

2010 2022 2050 2077 2110 2143 2176 2211

348 AEPD2

2250 2262 2290 2317 2350 2383 2416 2451

349 AEPD3

2490 2502 2530 2557 2590 2623 2656 2691

296 AEPDT

NOT USED

370 AEPDVE

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2684 2714

372 AEPEF1

1740 1759 2017 2044 2066 2083 2099 2116 2132 2149
2165 2200 2218 2230

373 AEPEF2

1767 1775 2257 2284 2306 2323 2339 2356 2372 2389
2405 2440 2458 2470

374 AEPEF3

1783 1791 2497 2524 2546 2563 2579 2596 2612 2629
2645 2680 2698 2710

355 AEPFT

1719 1725 1731 2029 2269 2509

363 AEPIN1

2213 2222 2453 2462 2693 2702

359 AEPIR

1873 1880

182 AEPP1

1795 1919

183 AEPP2

1798 1941

184 AEPP3

1801 1962

181 AEPPM

848

295 AEPST

1198 1207 1387 2962

357 AEPUF

1870 1987 3097 3106

185 AEPUP

1826 3101

303 AER123

1141 1146 1150 1155 1266 1378

311 AERAM

455 986

192	AERE0	1745 4062
202	AERE10	2117 2357 2597
203	AERE11	2150 2390 2630
204	AERE12	2219 2459 2699
193	AERE1	2067 2307 2547 3688
194	AERE2	2100 2340 2580 3694
195	AERE3	2133 2373 2613 3700
196	AERE4	1349 2166 2406 2646 3706
197	AERE5	1331 2201 2441 2681 3634
198	AERE6	2231 2471 2711 3620
199	AERE7	3623
200	AERE8	2018 2045 2258 2285 2498 2525
201	AERE9	2084 2324 2564 3424
304	AERNO	1254
147	AERSI	136
316	AESAV	NOT USED
153	AESCH	677
160	AESDW	847 912
317	AESV2	559 560 717 721
318	AESVF	568 571 711
319	AESVS	589 592 690 698
301	AESYD	1215 2789
156	AESYN	840
293	AETCY	497 1288 1291 1510
158	AETIM	842
294	AETST	1292 2958

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  327  AISTK1
                600
  328  AISTK2
                603
  329  AISTK3
                606
  330  AISTK4
              609   623
  326  AISV2
              612   613   637   641
  393  ALDU
             4139  4204  4215
  231  APBUF
           NOT USED
  167  APCIM
           NOT USED
  240  APEMAX
             2777  3443  3446  3452
  241  APERR
             1419  3423  3619  3633  3687  3693  3699  3704  4061
  238  APFREQ
             1486  1492  3417
  232  APIP
             1394  3054  3095  3345  3380  3416
  239  APMDT
           NOT USED
  237  APNIF
             1495
  163  APNON
              844
  406  APP1U
             1704  1806  1916  1924  4163
  407  APP2U
             1707  1811  1938  1946  4168
  408  APP3U
             1710  1816  1959  1967  4173
  405  APPDU
             1713  1821  1828  1901  1982  3103  4145
  165  APREQ
           NOT USED
 3434  APSWCH
             3326
  242  APTAVT
           NOT USED
  234  APTCP
           NOT USED
  235  APTCS
           NOT USED
  236  APTEI
           NOT USED
  233  APTEM
             3398  3407  3463  3467  3481  3496  3506
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166  APTER
           NOT USED
243  APTITE
           NOT USED
245  APTPMT
           NOT USED
400  ARTC
             436   538   618   826   875   978   993
399  ASDB
           NOT USED
397  ASDU
             923  4210
381  ASEAD
             792   804  4079  4099
212  ASMAD
             794   806  4081
380  ASSAD
             790   802  4077  4100  4107
279  ATAI1
            1736  1763  1779  2727  2738  2749
280  ATAI2
            1755  1771  1787  2733  2744  2755
256  ATBUF
            4225  4257  4283  4303
258  ATCDS
            1216  2952  3065  3111  3132  3147  3151  3152  3157  3168
            3363  3442
284  ATCIW
             525  2925  3017
257  ATCIWC
             527  2928  3021
169  ATCOPY
            3156  3161  3167  3172
396  ATCP
             920  4135
271  ATCTP
             518  2995  3002  3155  3165  3448  3464  3478  3493  3509
171  ATDIAL
             510
264  ATDWL
            2761  2951
282  ATECI
            3335  3373  3383  3457  3461  3474  3489  3508
263  ATEMP
           NOT USED
262  ATEOC
           NOT USED
272  ATERR
            1417  3025  3122
261  ATFST
            1468  1490  2948  2966  2968  3092  3109  3420
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 278  ATHI
                513   524  2918  3008
 281  ATIMX
               2991
 259  ATIN
                514  2917  2984  2986  3000  3018  3026  3334  3372
 260  ATINT
                520  2934  2936  3016  3515  3517
 170  ATNCY
               1477
 270  ATNTP
               3160  3166  3171  3392  3405
 287  ATPE
                494
 168  ATPEX
                845
 267  ATPM1
                489  1717  1735  1754  2728  2734
 268  ATPM2
               1723  1762  1770  2739  2745
 269  ATPM3
               1729  1778  1786  2750  2756
 265  ATPP
               3153  3158  3169
 286  ATPTAB
                488
 277  ATSCI
          NOT USED
 247  AVCBT
               1401  3328  3332  4044
3922  AVCBUS
               3849
 251  AVCDB
               3589
 250  AVCDT
               3350  3354  3578  3618  3632  3645  3686  3692  3698  3705
               4060
3924  AVCER
               3937  3952  4004  4022
4038  AVCK
               4037
 164  AVCLAS
               3351
 249  AVCLOG
               3636  3678  3797  3858  4045  4052
 252  AVCSDB
                479  3529  3587
 248  AVCVC
               1312  1321  3647
3923  AVCVNB
               3820  3823  3826  3844  3847  3850
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226 AXBUF
914 919 924 1081 1105 1450 4205 4231 4240 4273
4300 4304
4323 AXCFT
4270 4296
227 AXERR
1413 4259 4285
207 AXLOF1
1705 1708 1711 1829 1917 1939 1960 3104
209 AXLOF2
1714 1902
206 AXLON1
1807 1812 1817 1925 1947 1968
208 AXLON2
1822 1983
172 AXRTC
836
174 AXSDC
530 846
173 AXWDT
1131 1746
4429 BBUF
220
4431 BCP1
NOT USED
4432 BCR2
NOT USED
4430 BDIN
221
4677 BERR
222
4678 BERRF
NOT USED
4162 BPAN
179
4463 BPD1
343
4464 BPD2
344
4465 BPD3
345
4181 BPIN
4164 4169 4174
4452 BPPD
342
4135 BRTC
175
91 C0
437 460 478 588 619 686 748 768 827 876
904 970 979 994 1077 1195 1206 1352 1358 1489
1491 1520 1697 1840 1893 1989 2038 2053 2184 2187
2278 2293 2424 2427 2518 2533 2664 2667 2835 2848
2859 2963 2987 2999 3048 3091 3105 3108 3344 3399
3419 3459 3472 3486 3501 3534 3549 3615 3651 3755
3776 3864 3939 3956 3957 3992 4005 4024 4042 4216
4309 4380 4386 4392 4398

102 C125

3627

100 C15

NOT USED

92 C1

466 481 492 493 537 585 591 661 669 753
855 901 907 967 973 1094 1100 1118 1158 1197
1289 1295 1322 1341 1354 1467 1539 1550 1561 1572
1583 1594 1605 1616 1627 1638 1649 1660 1671 1845
1906 1910 1986 2019 2031 2046 2068 2085 2092 2101
2118 2125 2134 2151 2158 2167 2194 2202 2220 2232
2259 2271 2296 2308 2325 2332 2341 2358 2365 2374
2391 2398 2407 2434 2442 2460 2472 2499 2511 2526
2548 2565 2572 2581 2598 2605 2614 2631 2638 2647
2674 2682 2700 2712 2961 2983 3029 3067 3126 3144
3189 3192 3193 3348 3355 3415 3538 3553 3624 3635
3677 3954 4051 4063 4103 4110 4120 4262 4288

93 C2

1124 1143 1927 1931 3075 3138

94 C3

624 1949 1953 3083 3142

101 C48

749

95 C4

570 633 697 886 952 1006 1147 1970 1974

96 C5

NOT USED

97 C6

1214 2793 4035

98 C7

4166 4171

99 C8

1151

108 CCBO

587 903 969 4111

109 CCB1

NOT USED

116 CCCF

832

113 CCCU

739

106 CCEZ

656 691 1000 1088 1112 1142 1145 1149 1153 1170
1177 1184 1388 1395 1402 1420 1429 1739 1758 1766
1774 1782 1790 1805 1810 1815 1820 1842 1883 1923
1945 1966 1981 3329 3592 4252 4278

110 CCNZ

1129 1242 1245 1261 1264 1412 1414 1416 1418 1487
1868 1874 3004 3055 3096 3098 3352 3381 3617 3622
4227 4229

114 CCPH

534

111	CCSF	435 557
112	CCZN	1843 2033 2181 2273 2421 2513 2661 3396
107	CCZP	1518 2998 3458 3484 3499 4010 4030
84	CM100	NOT USED
87	CM10	2087 2120 2153 2327 2360 2393 2567 2600 2633
83	CM110	NOT USED
86	CM16	464
90	CM1	470 581 634 673 708 754 897 963 1017 1217 1876 1887 2953 3330 3411 3412 3584 3644 4098 4119
85	CM20	3186
89	CM2	NOT USED
88	CM6	766
954	COTF1	964
973	COTF2	969
977	COTF3	972
1003	COTF4	1000
1008	COTF5	1018
940	COTF	176
4590	CSAV	321
4593	CSV2	322
4595	CSVF	323
4597	CSVS	324
4622	CTST	336
46	DO	475 545 655 664 665 666 670 687 706 771 818 858 918 1015 1032 1064 1097 1099 1121 1123 1133 1161 1163 1164 1191 1210 1223 1236 1238 1243 1246 1255 1257 1262 1265 1269 1299 1340 1343 1361 1452 1482 1496 1498 1506 1511 1521 1523 1542 1543 1544 1545 1553 1555 1556 1564 1566 1567 1575 1577 1578 1586 1588 1589 1597 1599 1600 1608 1610 1611 1619 1621 1622 1630 1632 1633 1641 1643 1644 1652 1654 1655 1663 1665 1666 1674 1676 1677 1720 1738 1757 1765 1773 1781 1789 1831 1841 1849 1992 2007 2011 2013 2023 2030 2041 2051 2055 2079 2091 2112

2124	2145	2157	2190	2193	2214	2236	2247	2251	2253
2	22	229	295	9	[illegible]	23	236	385	97
2430	2433	2454	2476	2487	2491	2493	2503	2521	2531
2535	2559	2571	2592	2604	2625	2637	2670	2673	2694
2716	2730	2741	2752	2764	2802	2806	2821	2868	2897
2905	2929	2933	2939	2969	3022	3032	3034	3050	3129
3130	3131	3154	3159	3162	3170	3173	3191	3195	3360
3366	3368	3395	3400	3408	3421	3425	3439	3445	3450
3453	3455	3456	3466	3468	3469	3473	3482	3483	3485
3487	3497	3498	3500	3502	3504	3505	3512	3513	3516
3518	3551	3555	3560	3600	3601	3625	3628	3638	3639
3641	3648	3663	3673	3680	3683	3744	3748	4047	4050
4054	4057	4064	4117	4138	4148	4176	4196	4211	4213
4218	4226	4238	4247	4258	4265	4266	4267	4268	4276
4284	4291	4293	4294	4307	4310	4311	4382	4388	4394
4400									

56 D10

1390 1581 1653 3876 3945 3969 3995 4015 4055

73 D116

854

74 D118

853

57 D11

1593 1596 1664 3060 3877 3891 3929 3970 3984 3996
4053

58 D12

759 1592 1675 3531 3865 3940 3958 3993 4006 4028

59 D13

1604 1607 3546 3938 3955

60 D14

760 1284 1603 2923 3014 3761 3782 3818 3842 3935
3950 4002 4020

61 D15

1063 1444 1615 1618 2967 3544 3866 4026 4245 4299

62 D16

1614 4023

63 D17

586 902 968 1626 1629

64 D18

1625

65 D19

1637 1640

47 D1

563 573 616 626 640 660 663 704 720 873
889 915 945 955 1013 1029 1082 1085 1098 1168
1237 1239 1256 1258 1337 1339 1447 1499 1501 1512
1514 1538 1541 1554 1726 2034 2039 2074 2078 2180
2188 2195 2196 2270 2274 2279 2314 2318 2420 2428
2435 2436 2514 2519 2554 2558 2660 2668 2675 2676
2735 2746 2757 2768 2778 2810 2843 2854 2867 2893
2903 2965 3033 3051 3071 3125 3128 3339 3341 3374
3375 3602 3603 3637 3656 3814 3838 3932 3947 3962
4123 4141 4182 4206 4232 4234 4241 4243 4261 4264
4274 4292

66 D20

1636

67 D21

1648 1651

68 D22

1647

69 D23

1659 1662

70 D24

1658

71 D25

1670 1673

72 D26

1669

48 D2

499 575 628 659 702 891 957 1011 1106 1109
1122 1175 1240 1259 1439 1502 1504 1517 1519 1537
1565 1732 2107 2111 2226 2347 2351 2466 2510 2587
2591 2706 2772 2776 2781 2782 2785 2813 2841 2856
2895 3124 3336 3436 3449 3510 3604 3605 3665 3681
3739 3750 3753 3774 3961 3968 4143 4184 4208 4235
4237 4244 4246 4260 4301

49 D3

577 630 700 763 893 959 1009 1093 1096 1162
1182 1549 1552 1576 2027 2043 2060 2140 2144 2267
2283 2300 2380 2384 2507 2523 2540 2620 2624 2786
2805 2816 2845 2901 3028 3031 3451 3462 3586 3606
3607 3658 3679 3805 3829 3874 3875 4186 4287 4290
4305 4308

50 D4

447 579 580 632 895 896 961 962 1045 1092
1202 1431 1548 1587 2095 2173 2177 2335 2413 2417
2575 2653 2657 2809 2819 3027 3117 3465 3608 3609
3667 3738 3742 3754 3775 3800 3869 3960 3967 4086
4116 4188 4286 4306

51 D5

450 1050 1117 1120 1169 1176 1183 1189 1192 1196
1203 1423 1560 1563 1598 2128 2208 2212 2368 2448
2452 2608 2688 2692 2807 2812 3079 3119 3140 3475
3479 3598 3599 3621 3652 3660 3798 3810 3834 3870
4008 4190

52 D6

451 1054 1116 1382 1404 1436 1559 1609 2161 2401
2641 2815 3490 3494 3610 3611 3669 3741 3745 3749
3773 3861 3966 4025 4192

53 D7

452 1058 1157 1160 1397 1571 1574 1620 2061 2301
2541 2818 3384 3387 3402 3559 3591 3613 3616 3751
3757 3778 3859 3999 4017 4194

54 D8

1156 1570 1631 2057 2297 2537 2763 2767 2771 3389
3806 3812 3830 3836 3871 3879 3881 3930 3943 3963
3972 3974 3997 4013 4048 4251

55 D9

1582 1585 1642 3087 3807 3831 3872 3888 3892 3895
3944 3964 3981 3985 3988 4014 4046

4771 DEND

385

76 DETS

1367 3433 3712

41 DM12

752

45 DM1

562 615 639 719 872 944 1028

44	DM2	561	614	638	718	871	943	1027
43	DM4	699	1008					
42	DM7	758						
78	DPMD	4043						
1855	E100	364						
1854	E10	365						
888	EADC1	898						
907	EADC2	903						
910	EADC3	906						
923	EADC4	917						
868	EADC	162						
4076	EBKD1	4087						
4073	EBKD	151						
4091	EBKDE	4082	4088					
4538	EBUF	291						
752	ECCU1	755						
736	ECCU	149						
775	ECCUI	743						
771	ECCUR	740	745	779				
726	ECER	152						
4549	ECMF	299						
1104	ECOM1	1088						
1128	ECOM2	1112						
1076	ECOM	155						
1133	ECOMR	1126	1129					
4567	ED23	306						

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4766  EDERR
                310
1314  EDET1
               1357
1336  EDET2
               1325
1366  EDET32
               1324
1352  EDET3
               1317  1333
1306  EDET
                161
1364  EDETI
               1308
1365  EDETM
               1315
1361  EDETR
               1310
4573  EDETT
                309
1042  EDIS
                154
1066  EDISH
               1047  1052  1056  1060
 860  EDLAY
                852
4572  EDMIT
                308
4568  EDNO
                307
4612  EDSAV
          NOT USED
4615  EDSV2
                332
4617  EDSVF
                333
4619  EDSVS
                334
1466  EEOC
                159
4731  EERR0
          NOT USED
4732  EERR1
          NOT USED
4733  EERR2
          NOT USED
4734  EERR3
          NOT USED
4735  EERR4
          NOT USED
4736  EERR5
          NOT USED
```

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4721  EERR
                297
4722  EERRF
           NOT USED
 572  EGIS1
                582
 591  EGIS2
                587
 649  EGIS3
                590   593
 694  EGIS4
                691
 699  EGIS5
                709
 556  EGIS
                148
 534  EHLT
           NOT USED
2892  EM10
                189
2900  EM24
                190
 785  EMAD
                150
 813  EMADE
                795   807
 818  EMADR
                811
1249  EMIC1
               1242  1245
1268  EMIC2
               1261  1264
1230  EMIC
                157
4653  EP1E
                367
4654  EP2E
                368
4655  EP3E
                369
1753  EPAN1
               1739
1691  EPAN
                180
1746  EPANE1
               1823
1743  EPANE
               1760  1768  1776  1784  1792
2859  EPBI1
           NOT USED
2848  EPBI2
                186
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2835	EPBI3	187
2833	EPBI	NOT USED
2867	EPBIR	2840 2853 2864
4635	EPCD1	351
4645	EPCD2	352
4646	EPCD3	353
4659	EPCF	358
1852	EPCY	362
4630	EPD1	347
4631	EPD2	348
4632	EPD3	349
4547	EPDT	296
4656	EPDVE	370
4756	EPEF1	372
4759	EPEF2	373
4762	EPEF3	374
1485	EPEOC	1474
1841	EPFI1	1847
1839	EPFI	1718 1724 1730
1849	EPFIR	1843
4649	EPFT	355
1853	EPIN1	363
4660	EPIR	359
2065	EPP10	2009
2099	EPP11	2076
2132	EPP12	2109

2165	EPP13	
		2142
2200	EPP14	
		2175
2230	EPP15	
		2210
2003	EPP1	
		182
2305	EPP20	
		2249
2339	EPP21	
		2316
2372	EPP22	
		2349
2405	EPP23	
		2382
2440	EPP24	
		2415
2470	EPP25	
		2450
2243	EPP2	
		183
2545	EPP30	
		2489
2579	EPP31	
		2556
2612	EPP32	
		2589
2645	EPP33	
		2622
2680	EPP34	
		2655
2710	EPP35	
		2690
2483	EPP3	
		184
1880	EPPM1	
		1871
1910	EPPM2	
		1890
1931	EPPM3	
		1913
1953	EPPM4	
		1934
1974	EPPM5	
		1956
1865	EPPM	
		181
1992	EPPMR	
		1883 1908 1929 1951 1972 1977
4546	EPST	
		295

4658 EPUF
357
2723 EPUP
185
2805 EPUPS
2791 2796 2800
4562 ER123
303
1536 ERE0
192
1646 ERE10
202
1657 ERE11
203
1668 ERE12
204
1547 ERE1
193
1558 EPE2
194
1569 EPE3
195
1580 ERE4
196
1591 ERE5
197
1602 ERE6
198
1613 ERE7
199
1624 ERE8
200
1635 ERE9
201
4563 ERN0
304
434 ERSI
147
669 ERTC1
656
654 ERTC
NOT USED
4539 ERTCF
NOT USED
858 ERTS
850
4580 ESAV
316
825 ESCH
153
1421 ESDW1
1412 1414 1416 1418

1375	ESDW	160
625	ESTK1	635
598	ESTK	435 557
4583	ESV2	317
4585	ESVF	318
4587	ESVS	319
1217	ESYA1	1221
1222	ESYA2	1219
1212	ESYA	1167 1174 1181 1187
4550	ESYD	301
1166	ESYN1	1145
1173	ESYN2	1149
1180	ESYN3	1153
1188	ESYN4	1171 1178 1185
1187	ESYN4A	1142
1201	ESYN5	1194
1209	ESYN6	1170 1177 1184 1199 1205
1140	ESYN	156
490	ETCPY	495
4543	ETCY	293
1516	ETEOC1	1513
1520	ETEOC2	1515 1518
1509	ETEOC	1480
1294	ETIM1	1286
1280	ETIM	158
1299	ETIMR	NOT USED

4541	ETST	294
1367	EVCVC	1356
480	EZDB	494
18	FC10	4191
19	FC11	4181
20	FC12	4183
21	FC13	4185
22	FC14	4187
23	FC15	4189
30	FC17	4193
13	FC1	925 4207 4212
14	FC2	4209
15	FC3	4137 4140 4146
32	FC41	439 461 828 878 981 4217
33	FC42	539 995
34	FC43	438 620 877 921 980
35	FC44	4381
36	FC45	4387
37	FC46	4393
38	FC47	4399
16	FC4	4142
4314	H0006	NOT USED
2876	H0009	2862
1272	H000E	1253
2873	H000F	2861
1457	H0010	1428

1273	H0030	1234
4315	H007F	4277
2875	H0090	2851
2872	H00F0	2850
421	H0200	454
1995	H0400	1867 1878
2874	H0900	2838
2871	H0F00	2837
549	H0FFF	498
3727	H1T1	3822
3728	H1T2	3824
3729	H2T1	3846
3730	H2T2	3848
416	H3000	NOT USED
422	H3BFF	4078
417	H3FFF	791 1083 1086 1107 1110
4316	H7F00	4250
415	H7FFF	1497 1500 1503 4233 4236 4242
419	HEC00	801
420	HECCF	803
1455	HF800	1383
1456	HFFEF	1411
119	INEN	441 621 830 879
4605	ISTK1	327
4606	ISTK2	328
4607	ISTK3	329

```
4608  ISTK4
                330
4609  ISTK5
            NOT USED
4601  ISV0
            NOT USED
4602  ISV1
            NOT USED
4603  ISV2
                326
4604  ISV3
            NOT USED
4600  ISV
            NOT USED
4774  LAC
                  4
4775  LBP
                131   143   215   314   339   377   388   411
4783  LBX
               4130  4153  4200  4222  4320  4372
4784  LDB
               4407  4577  4625  4663  4672
4785  LDU
            NOT USED
4782  LEB
               4070  4095
4776  LFR
                429   553   733   782   822   865   935  1527
4777  LFS
               1039  1073  1137  1227  1277  1303  1372  1462
4778  LPP
               1685  1859  2000  2240  2480  2720  2825  2880
4780  LPR
               3324  3520
4779  LTP
               2912  2943  2978  3043  3177  3199
4781  LVC
               3572  3710  3733  3793  3853  3901  3927  4041
4476  PBUF
                231
 127  PCIM
                167
4490  PEMAX
                240
4691  PERR
                241
4692  PERRF
            NOT USED
4483  PFREQ
                238
4477  PIP
                232
```

3349	PM01	3359		
3361	PM02	3353		
3386	PM05	3413		
3346	PM0	3338	3342	
3436	PM1	3378		
3440	PM2	3438		
3504	PM3	3470		
3505	PM4	3484	3499	
3507	PM5	3477	3492	3503
3431	PMAS2	3390	3403	
3427	PMAS	3364		
4484	PMDT	239		
3422	PMER10	3396		
3433	PMHD	3357		
4482	PMIF	237		
3432	PMM1	3476	3491	
3325	PMON	163		
3425	PMRET	3381		
126	PREQ	165		
3521	PSWCH	3434		
3563	PSWFC	3535	3539	3541
3564	PSWFD	3550	3554	3556
4485	PTAVT	242		
4479	PTCP	234		
4480	PTCS	235		
4481	PTEI	236		

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4478  PTEM
                233
 125  PTER
                166
4486  PTITE
                243
4487  PTPMT
                245
4667  SEAD
                381
 120  SELF
                692   694   1001  1003  1381
4102  SMAD1
               4105
4108  SMAD2
               4112  4122
4119  SMAD3
               4109
4098  SMAD
                212
4115  SMADE
               4111
4666  SSAD
                380
2971  T0
               2930  2937  2949
2972  T1
               2935  3133
2973  T2
               3135
2974  T3
          NOT USED
3213  TAI1
                279
3214  TAI2
                280
4519  TBUF
                256
4521  TCDS
                258
3241  TCIW
                284
4520  TCIWC
                257
3186  TCOPY
                169
4534  TCTP
                271
3144  TD1
               3134  3141
3138  TD2
               3120  3136
```

```
3142  TD3
                3137
3151  TDCH
                3112
3116  TDIAL
                 171
3146  TDSEL
                3139  3143
4527  TDWL
                 264
3219  TECI
                 282
4526  TEMP
                 263
4525  TEOC
                 262
4717  TERR0
              NOT USED
4718  TERR1
              NOT USED
4713  TERR
                 272
4714  TERRF
              NOT USED
3008  TEZ
              NOT USED
3231  TFEP
                3230
4524  TFST
                 261
3004  TGEZ
                2998
3016  TGZ
                3004
3212  THI
                 278
3215  TIMX
                 281
4522  TIN
                 259
4523  TINT
                 260
3233  TLEP
                3230
3187  TLOOP
                3194
2999  TLZ
              NOT USED
2930  TMSG
                2921  2924
3046  TNCY
                 170
```

```
3140  TND2
                3118
3165  TNDC
                3055  3149
4533  TNTP
                 270
2981  TNXT
                2938  3011  3015
3023  TOL
                2990  2994
3317  TPE
                 287
2915  TPEX
                 168
4530  TPM1
                 267
4531  TPM2
                 268
4532  TPM3
                 269
3263  TPTAB
                 286
3113  TPUE
                3096  3099
2966  TRSET
                2950  2960
3211  TSCI
                 277
3075  TSD2
                3070
3083  TSD3
                3078
2946  TSST
                2931
3065  TSYNC
                NOT USED
3094  TSYNCE
                3073  3081  3086  3089
3091  TSYNCR
                3062  3072  3080  3088
3627  VC01
                3617  3622
3643  VC02
                3629
3723  VC31
                3804
3724  VC32
                3809
3725  VC41
                3828
3726  VC42
                3833
```

4497	VCBT	247
4042	VCBUS	3922 4034
3905	VCCO	3756 3777 3813 3837 3902 3931 3946 3998 4016
3902	VCCP	3863 4032
4500	VCDB	251
3734	VCDHK	3676
4496	VCDT	250
3684	VCER1	3582
3690	VCER2	3657 3659 3661
3696	VCER3	3664 3666 3668 3670
3702	VCER4	3740 3743 3746
4056	VCER	3924
3677	VCGTF	3653
3712	VCHD	3580
3850	VCHE	NOT USED
3796	VCHFE	3675 3763 3768 3771 3784 3790
3891	VCK0	3897
3895	VCK1	3886
3930	VCK21	3883
3929	VCK2	3894 3898
3943	VCK3	3882 3890 3893
3960	VCK5	3941
3984	VCK6	3990
3988	VCK7	3979
3992	VCK8	3976 3987
4013	VCK9	3975 3983 3986

3867 VCK
4038
3857 VCKFE
3789
3573 VCLAS
164
3713 VCLD
3581
4506 VCLOG
249
3921 VCM15
3884 3885 3887 3889 3896 3977 3978 3980 3982 3989
3715 VCMA
3655
3717 VCMOF
3672 3674
3716 VCMT
3662
4031 VCNK
4011
3624 VCRET
3592 3689 3695 3701 3707
4425 VCSDB
252
3719 VCST1
3788
3720 VCST2
3767
3721 VCST3
3769 3770
4499 VCVC
248 1367
4051 VCVNB
3923 3994 4010 4030
4468 XBUF
226
4283 XCCE
4278
4240 XCER
4229
4324 XCFT
4323 4368
4367 XCFTE
4368
4472 XCIWC
NOT USED
4473 XCIWP
NOT USED
4687 XERRO
NOT USED

```
4688  XERR1
                NOT USED
4681  XFRR
                  227
4682  XERRF
                NOT USED
4270  XFO1
                 4254
4296  XFO2
                 4280
4250  XFOW
                 4227
4368  XIMX
                 4253  4279
4385  XLOF1
                  207
4397  XLOF2
                  209
4379  XLON1
                  206
4391  XLON2
                  208
4257  X"CE
                 4252
4470  XOCW1
                NOT USED
4471  XOCW2
                NOT USED
4204  XRTC
                  172
4225  XSDC
                  174
4469  XSDW
                NOT USED
4215  XWDT
                  173
```

-- 3 0 -- DATE 10-10-75 TIME 14.254 ID = G5 CS-F.0

GPO 907-801

TE 662
.A3
no.FHWA-RD-
76-68 BORROWER

DOT LIBRARY
00055535